

# Guidelines for the Sensory Evaluation of Cocoa Beans as Chocolate



*Cocoa of Excellence - 2021 Edition*

[www.cocoaofexcellence.org](http://www.cocoaofexcellence.org)

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**CITATION:** Cocoa of Excellence (2021). *Guidelines for the Sensory Evaluation of Cocoa Beans as Chocolate*. Bioversity International, Rome, August 2021.



## Cocoa of Excellence - A world of quality and flavour diversity

Cocoa of Excellence recognizes quality and exceptional flavours of diverse cocoa varieties produced around the world, as well as the knowhow of producers of excellence to ensure the sustainability of the cocoa supply chain. It offers market opportunities and provides incentives to safeguard cocoa diversity for the benefits of the entire value chain, from the farming communities to the consumers.

Cocoa of Excellence's objectives are to:

- Increase awareness and promote education along the cocoa value chain on the opportunity to produce superior quality cocoa and preserve flavours resulting from genetic diversity, "terroir" and know-how of the cocoa producers.
- Facilitate communication and linkages between cocoa producers and operators in the supply chains to promote market opportunities.
- Increase capacity of producing countries to recognize, seek out, value and preserve cocoa quality and diversity.

Cocoa of Excellence is led by the Alliance of Bioversity International and CIAT, part of the CGIAR and organized in partnership with the International Cocoa Organization (ICCO), Event International, Guittard Chocolate, Segune Cacao, Cocoa and Chocolate Advisors, Barry Callebaut, Puratos/Becolade, the Cocoa Research Centre of the University of the West Indies (CRC/UWI), Valrhona, Treegether, Regis Bouet, CacaoCrudo, Herencia and CocoaTown with contributions from SGS, OLAM, Alexandre Chocolaterie and ClearChox.

For this 2021 Edition, Cocoa of Excellence received 235 cocoa bean samples from 53 countries. A detailed physical evaluation was done and all accepted beans were processed into liquor and evaluated blindly by the 11 members of the Cocoa of Excellence Technical Committee during March to July 2021.

The 50 best bean samples selected from the four cocoa-producing regions of the world: Africa and the Indian Ocean, Asia, Pacific and Australia, Central America and the Caribbean, and South America. They were processed into a dark chocolate, tempered and moulded during May to August 2021 for evaluation by a broad international professional sensory evaluation jury from 10 to 27 September 2021. That panel includes the Technical Committee and an additional 30 cocoa and chocolate professionals. The sensory evaluation data is then analysed in October and the Cocoa of Excellence Awards are selected to be celebrated during a virtual ceremony exceptionally for this 2021 Edition, in early November.

These 50 Best Cocoa of Excellence samples provides a unique taste experience, where the stories of 50 cocoa origins unfold. A glimpse of cocoa diversity will be uncovered through the vast range of flavours and colours that makes each of the 50 chocolates unique. While the chocolate recipe for each is exactly the same, without added flavours, all 50 chocolates display a diversity of flavours because of one key feature – the cocoa beans.

More information on Cocoa of Excellence at: [www.cocoaofexcellence.org](http://www.cocoaofexcellence.org)

### Sharing Evaluation Results with Cocoa Producers

All participating cocoa producers receive a confidential detailed feedback report at the end of each Edition, including the physical quality assessment, the liquor evaluation and for the Best 50 samples, the chocolate evaluation. The jury should keep this in mind when completing the evaluation to provide comments that would be valuable to the cocoa producers for a better understanding of the value proposition of their cocoa and in some case for any improvements in post-harvest that could be made.

### Cocoa of Excellence 2021 Awards Ceremony – Virtual Celebrations

**PLEASE NOTE** that due to the COVID-19 pandemic and continued travel restrictions, the 2021 Cocoa of Excellence Awards Celebrations **WILL EXCEPTIONALLY TAKE PLACE VIRTUALLY** at the beginning of November. All actors of the cacao, cocoa and chocolate value chain, including participants in Cocoa of Excellence and the evaluation of 50 best samples, are cordially invited to join the celebrations with the cocoa producers at the occasion of the Cocoa of Excellence Awards. All details will be communicated separately.



## The 50 Best Cocoa Bean Samples - Processed into Chocolate

A detailed physical quality assessment is conducted on all received bean samples. Accepted samples are roasted and cocoa nibs ground into cocoa liquor following the International Standards for the Assessment of Cocoa Quality and Flavour (ISCQF)<sup>1</sup>. The basic roasting condition (Table 1) is determined for each bean sample, based on the dominating genetic type of the beans (as indicated by the producer), and the appearance and aroma of the fresh cut beans. Further adjustments are made based on the bean size and moisture content. Beans are roasted in batches of 480g in a forced-air convection oven (Binder FD56), measuring the time from -2°C from set point, assuming an oven recovery time of 4 minutes.

Cocoa of Excellence ensures that each bean sample is processed with the most care to preserve and allows optimum flavour expression of the beans as prepared by the participating producers. The chocolate samples have been carefully handcrafted following the Cocoa of Excellence protocol with as little processing and alteration in flavour as possible.

All protocols of sample analysis and preparation are the same across all bean samples to allow for a comparison between samples, with the exception of the roasting. The roasting process is described in details in the First draft of the Protocol for Roasting Cocoa Beans: part of the ISCQF.

Table 1. Basic Roast Type

Basic Roast type	Temperature (°C)	Time (minutes)	Cocoa bean aroma from cut test and remarks on genetic types
Light	112	25	Aroma of significant floral, nutty or caramel notes. Best suited for Criollo types.
Medium	120	25	Aroma of significant fresh, browned fruits and spicy notes. Best suited for Trinitario types.
Full	130	25	Aroma dominated by cocoa notes (above flavours not perceived). Best suited for Forastero types.

Based on the blind sensory evaluation of the 11 members of the 2021 Cocoa of Excellence Technical Committee and rigorous data analysis, the 50 Best samples are selected and processed into a dark chocolate by Seguire Cacao Cocoa and Chocolate Advisors/Guittard Chocolate following the Cocoa of Excellence formulation in Table 2. The chocolates are tempered and moulded by Barry Callebaut, France.

Table 2. Cocoa of Excellence Chocolate Formulation

Cocoa Nibs	61 %
Sugar (odourless sugar cane)	33.65 %
Deodorised Cocoa Butter	5 %
Soya lecithin	0.35 %
% Cocoa	66 %
Ratio Cocoa Mass (nibs) / sugar	1.81
Chocolate fineness	14 - 18 µ

This chocolate formulation is standardized regardless of the % of fat of the nibs/liquor. This results in variations in the final chocolate viscosity but preserves the ratio so that it is the same for all samples.

Each of the 50 chocolate samples is assigned a unique three-digit blind code to ensure anonymity and avoid biases that may occur in sensory evaluation. Below is an example of the label for the 2021 Edition.



<sup>1</sup> International Standards for the Assessment of Cocoa Quality and Flavour ISCQF: [www.cocoaqualitystandards.org](http://www.cocoaqualitystandards.org)



## Guidelines for Sensory Evaluation

These guidelines provide the best practice for the sensory evaluation of the 50 best cocoa beans samples processed in a dark chocolate, with the same formula for all samples (details in next page). These can be used to for any sensory evaluation of chocolate.

The **objectives** of sensory evaluation are to:

1. Identify the specific flavour attributes of each cocoa bean sample processed into a dark chocolate and rate their intensities on a scale of 0 to 10.
2. Assign a Global Quality Score on a scale of 0 to 10, considering all aspects of the sample.
3. Provide confidential feedback to the cocoa producers on the flavour attributes and global quality of the samples.
4. Allow for the selection of the Cocoa of Excellence 2021 Awards - Gold, Silver and Bronze

Sensory evaluation of cocoa beans in chocolate uses the following 4 Cocoa of Excellence resources:

- The guidelines with recommendation in this document
- Glossary of Terms for Cocoa Bean Flavour Evaluation as Liquor and Chocolate August 2021
- Flavour Wheel August 2021
- Sensory Evaluation Form [Digital tool] August 2021 – Selecting “Chocolate” as the Type of Evaluation

The Glossary of Terms includes definitions and scale for core and complementary flavour attributes, off flavours and Global Quality score. The Flavour Wheel provides a quick guide and visualisation of the core and complementary attributes. The evaluation data is recorded using the Sensory Evaluation form includes detailed instructions and quick access to the Glossary of Terms.

The Cocoa of Excellence resources should be cited as indicated below<sup>2</sup> and are freely available at:

<http://www.cocoaofexcellence.org/about-us/quality-and-flavour-assessment/>

**Logistics:** Cocoa of Excellence ships the 56 chocolate samples from the Alliance of Bioversity International and CIAT in Rome, Italy and communicates individually by email with each jury member to provide the instructions on the process.

**DEADLINE** to submit completed evaluation data: **30 September 2021**

**Confidentiality and Data Analysis:** Cocoa of Excellence keeps the identification of all participating jury members anonymous and treats all evaluation results confidentially. Only the coordination carrying out the data analysis has the information on the identity of each jury member.

**Panel performance:** For this 2021 Edition, Cocoa of Excellence introduces panel performance of participating jury member through the inclusion of 6 blind chocolate samples in addition to the 50 Best, for a total of 56 samples. The sensory evaluation data of these blind samples allows for the assessment of (1) repeatability of the jury in the evaluation of the sample replicates, (2) capacity of the jury to discriminate between samples and (3) degree of agreement between the jury and the rest of the panel members. Confidential and private feedback is provided to each jury member at the end of the Edition.

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### <sup>2</sup> CITATIONS:

- Cocoa of Excellence Technical Committee (2021). Cocoa of Excellence Glossary of Terms for Cocoa Bean Flavour Evaluation as Liquor and Chocolate. Bioversity International, Rome, August 2021.
- Cocoa of Excellence Technical Committee (2021). Cocoa of Excellence Flavour Wheel. Bioversity International, Rome, August 2021
- Cocoa of Excellence (2021). Cocoa of Excellence Sensory Evaluation Form [Digital tool]. Bioversity International, Rome, August 2021.



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### Tips for Tasting Sessions

All tasting sessions should be carried out in the same conditions, following the same procedure, and preferable and if possible, in the same place and at the same time of day. Taste a maximum of 5 samples per session and 2 sessions per day. Start each session with a pure dark chocolate 65-70% cacao to prepare your pallet.

#### Tasting area:

- Quiet room, preferably alone or in an individual booth.
- Chair to sit comfortably and a clean table surface.
- Comfortable room temperature, not too hot or too cold - preferably at 20-22°C.
- Good ventilation and lighting – similar to office light (500-800 lx).
- Area free from strong odours.
- Area free from distractions, walls with neutral colours.
- Area silent, without people interruptions and noise – no phones or on silent mode.

#### Avoid:

- Strong scents, perfumes, lotions, deodorants or aftershaves unless these are odourless. Wash hands prior to tasting with perfume-free soap.
- Smoking, drinking alcohol, coffee or eating food within 60 minutes prior to a tasting session.
- Strenuous exercise within 60 minutes prior to a tasting session.
- Colds. Any person suffering from colds or any illness affecting senses of smell and taste should postpone tasting sessions until fully recovered.

#### Materials prepared before tasting:

- A glass of water at room temperature. Cold water must be avoided.
- All chocolate samples to be evaluated during a tasting session at hand.
- If the chocolate are stored in a cold room, bring out of storage one hour before the tasting to room temperature.
- Computer to record each evaluation using the Cocoa of Excellence Sensory Evaluation Form
- Cocoa of Excellence Sensory Evaluation Excel Form – Selecting “Chocolate” as Type of Evaluation
- Cocoa of Excellence Glossary of Terms for Cocoa Bean Flavour Evaluation as Liquor and Chocolate
- Cocoa of Excellence Flavour Wheel
- All available at: <http://www.cocoaofexcellence.org/about-us/quality-and-flavour-assessment/>

#### During the tasting:

- Unless given a specific tasting order, taste the samples in a RANDOM order, NOT by codes to ensure that jury members have different sample effects from one sample to the next.
- Break 2 small pieces to assess the sample over 2 bites, to go through the full list of flavour attributes.
- Place 1 chocolate piece in the mouth, chew 3–4 times and let it sit on the tongue to melt.
- To allow the full development and circulation of aroma, move the chocolate piece around the mouth and breathe air while the chocolate melts and the flavours are released.
- In the mouth, notice the different flavour attributes apparent at 3 contiguous time intervals: (1) initial, (2) middle, and (3) residual end flavour notes.
- Some attributes will be more intense than others, some will last long, others disappear quickly, and some will appear clear and bright while others will remain in the background.
- After the chocolate melts, take time to notice the unique aftertaste.
- Score the intensity of the flavour attributes by order of perception on the palate. Attributes will not necessarily follow the order of the Evaluation Form. Attributes may become apparent and disappear. Score them as soon as they are perceived.
- Strive to be independent, follow intuition about a particular flavour attribute and trust your ability.

#### Between samples:

- Rinse the mouth to avoid saturation and carry-over effect of flavours from one sample to another.
- Take a short break to allow the palate and taste buds to recover.

