Annex 1

The Abidjan Declaration from the First World Cocoa Conference
ABIDJAN COCOA DECLARATION

World Cocoa Conference 2012

The Abidjan Cocoa Declaration is a legally non-binding expression of support for the World Cocoa Conference

Abidjan, 23 November 2012

A. Preamble

As key participants engaged in the cocoa value-chain: producers, cooperatives, traders, exporters, processors, chocolate manufacturers, wholesalers, producing and consuming countries, governmental and non-governmental organizations, financial institutions as well as donors and international aid and development agencies; we believe that the cocoa economy cannot prosper in the long term without operating in a more sustainable and cooperative manner. We recognize that through our business operations and/or through our initiatives in the sector, we have a responsibility towards the economic, environmental and social sustainability of the cocoa economy. We believe that this objective can only be reached without compromising healthy competition between market participants if we all cooperate as the scale of the challenges to be addressed are so complex and intertwined.

As stakeholders in the cocoa value chain, we have either participated in the World Cocoa Conference leading to the Global Cocoa Agenda for a Sustainable Cocoa Economy, or we have decided to support its recommendations. Collectively, we are all committed to playing our part in addressing the key challenges faced by the whole cocoa sector, in particular by providing opportunities for smallholder farmers to move out of poverty and to improve their livelihoods, a necessary condition to achieving sustainability of the sector.

B. The World Cocoa Conference – towards a Sustainable Cocoa Economy

Therefore, as signatories to the Abidjan Cocoa Declaration, we agree to participate in the process initiated by the first World Cocoa Conference, guided by the following principles:

In relation to the Strategic Management of the sector

a. To recommend working towards a visible and coherent approach of the initiatives currently undertaken in the cocoa sector, thus providing the framework for a better coordination of these operations;

b. To recommend developing and/or assisting, as required, the formulation and implementation of national cocoa development plans, based on transparent and fully participatory local Public-Private-Partnership (PPP) approaches;

c. To give due consideration to applicable internationally recognized regulations and agreements, in particular with regard to the environment and food safety and related issues;
d. To aim to improve the living standards and working conditions of populations engaged in the cocoa sector, consistent with their stage of development, and in particular those of children and women, bearing in mind internationally recognized principles and applicable ILO standards;

e. To participate in a voluntary consensual process to attain sustainability, without impinging on contracting parties freedom to trade, taking into consideration the contribution of existing cocoa certification schemes, other programmes, as well as those initiatives under preparation at national, regional and international levels, bearing in mind that cocoa farmers should be adequately rewarded for additional efforts.

In relation to the Sustainability of Production

f. Aim, where necessary to transform cocoa farming into successful business entities that are likely to be attractive to younger generations. This is achievable by increased productivity and the sustainable growing of good quality cocoa that meets characteristics outlined by the cocoa and chocolate industry. These aims may be met by using better planting material and inputs, innovative technology, integrated pest management to control pests and diseases, while recognizing international labour standards;

g. Enable cocoa farmers to operate as members of farmers’ groups supported by adequate education and training in Good Agricultural Practices, backed up with affordable and accessible credit facilities and extension services, adequately managing soil fertility and preserving biodiversity and existing ecosystems;

In relation to the Sustainability of the Industry Chain

h. Promote the use of best known practices along the value chain thereby keeping the chain as short and efficient as possible, enhancing traceability and reduce any harmful action to the environment. Support all relevant stakeholders having adequate training and awareness of market conditions and consumer safety issues, in order that all entities along the value chain operate in a sustainable way in the long term. Additional income may also be generated by value-addition at origin;

In relation to the Sustainability of Consumption

i. Formulate and implement cocoa consumption strategies that meet evolving expectations and concerns of consumers, while promoting cocoa consumption in traditional/mature markets and in emerging markets, as well as in origin (producer) countries.
Annex 2

An overview of the best practices in cocoa production as identified by the ICCO
Note by the Secretariat

This is an update of document CB/4/5 Rev.1 on “Overview of Best Practices in Cocoa Production”, which was reviewed by the Consultative Board at its fourth meeting in March 2005. The current document incorporates comments and inputs since the last CB meeting in January 2008. The main changes are highlighted in bold and underlined.
MANUAL OF BEST KNOWN PRACTICES IN COCOA PRODUCTION

1. Introduction

1. For several reasons, it is essential that cocoa farmers apply best known practices in cocoa production. The first reason is that, only in this way can the highest physical quality standards be reached, given the planting material used. The second reason is that, in this way, food safety legislative standards can be met, thus avoiding any problems in the utilization and trade of the beans. Finally, through best known practices, the standards can be reached to achieve sustainable cocoa production, covering the aspects of economic, social and environmental sustainability.

2. The present document comprises Version I of a Manual of Best known Practices. It includes information from the Good Agricultural Practices (GAP) implemented in Malaysia and from other sources reviewed by the ICCO Secretariat.

3. The Consultative Board may wish to review this document as a first step to the production of field manuals on best known practices. The Secretariat is well aware of the need for greater detail and specificity to arrive at manuals which can be used in a certain concrete situation in the field.

2. Characteristics of good quality cocoa

4. The Model Ordinance of the International Cocoa Standards provides that cocoa of merchant quality must be: “(a) Fermented, thoroughly dry, free from smoky beans, free from abnormal or foreign odours and free from any evidence of adulteration. (b) Reasonably uniform in size, reasonably free from broken beans, fragments and pieces of shell, and be virtually free from foreign matter”. ¹

5. In the case of cocoa, “quality” is used in the broadest sense to include not just the all-important aspects of flavour and purity, but also the physical characteristics that have a direct bearing on manufacturing performance, especially yield of the cocoa nib (Biscuit, Cake, Chocolate and Confectionery Alliance (BCCCA), 1996). The different aspects or specifications of quality in cocoa therefore include: Flavour, Purity or wholesomeness, Consistency, Yield of edible material and Cocoa butter characteristics. These are the key criteria affecting a manufacturer’s assessment of “value” of a particular parcel of beans and the price he is willing to pay for it.

6. Cocoa farmers have little or no influence over the cultural factors of cocoa growing, as parameters such as the chemical characteristics of the soil available to them, the genetic make-up of the planting material used and the climatic environment are imposed on them by nature and science. While the farmer may exercise some latitude in choosing his planting material, this choice is naturally constrained by the diversity and characteristics of the cocoa varieties available to him from research and extension services. In any case, once the choice of planting material is made, there is not much the farmer can do to affect the end result in terms of quality, apart from concentrating on good cultivation and post-harvest practices.

7. Through good husbandry of the cocoa farm, including pest and disease control and harvest and post-harvest handling, farmers can ensure the production of good quality cocoa. The **best known** practices outlined below have attempted to integrate parameters related to the social and environmental dimensions of sustainability into production practices. It is hoped that these practices could eventually/possibly serve as monitoring and certification indicators and, as the case may be, for the production of good quality cocoa that meets the food safety demands of consumers.

8. In this context, it is important to recognize the role that farmers’ groups can play in the dissemination and adoption of best known practices. When farmers are organized in groups, it is easier to reach them and therefore easier to achieve the adoption of improved cultivation practices because of possible positive group dynamics.

3. **best known practices in cocoa production**

3.1 Establishment of the cocoa farm

3.1.1 Cocoa should be cultivated in the areas where it thrives best, i.e. areas with hot, moist climates, with average rainfall of between 1150mm and 2500mm, and a temperature range of 18˚C to 32˚C. Such areas lie along the equator in West Africa, Central and South America, and in Asia/Oceania.

3.1.2 Cocoa should be grown on land where there are no land tenure problems.

3.1.3 Establishment of new cocoa farms on forest land should be avoided as far as practically possible.

3.1.4 The soil for cocoa growing should be rich in nutrients and should have the appropriate physical and chemical properties, level of acidity, and organic matter content that are favourable to the development of the cocoa tree.

3.1.5 Depending on varietal requirements, adequate permanent shade trees should be provided in cocoa farms.

3.1.6 Farmers shall keep records of the site history and field layouts.

3.1.7 Land tillage practices that improve the soil structure should be encouraged. Land preparation for new cocoa farms should be done at least one year before cocoa seedlings are planted.
Permanent and some temporary shade trees should be established and well arranged to shelter young plants.

3.1.8 Choice of planting materials and rootstocks should be based on characteristics such as high productivity, quality of the bean, consumer acceptability, resistance to pests and diseases, etc.

3.1.9 Multiplication of seeds should be done in a seed garden using scientifically recommended practices. Farmers shall keep records of all the parent stocks.

3.1.10 Each farm should have or be close to cocoa seeds and a seedling nursery that is properly maintained and shaded.

3.1.11 Cocoa should be planted in the most suitable pattern and density according to the varietal requirements to ensure high productivity and easy management of the farms.

3.2 Cocoa Farm maintenance and crop husbandry

9. The length of time that a cocoa farm remains productive and financially viable is determined by the application of good maintenance practices, in particular pest and disease control. It is therefore important to maintain a high standard of farm management so that the cocoa tree is less susceptible to disease and insect attacks, as well as to ensure an appropriate response to specific outbreaks when they do occur. The following practices are recommended.

3.2.1 Improve and maintain soil organic matter through manure application.

3.2.2 Adopt field cultivation techniques that minimize soil erosion e.g. maintaining soil cover.

3.2.3 Encourage the most efficient use of farm resources (labour, inputs, etc.).

3.2.4 Optimize the use of labour, in particular avoiding the worst forms of child labour.

3.2.5 Use management practices that minimize nutrient loss but maintain or improve the soil nutrient balance.
3.2.6 Apply appropriate inorganic and organic fertilizers in accordance with scientific recommendations so as to maximize benefits and minimize losses.

3.2.7 Use efficient irrigation technologies and water management to minimize wastage and avoid leaching and salinization.

3.2.8 Adopt appropriate weed control measures to keep the ground around the cocoa tree and the shade tree free from weeds. In weed control, two different techniques can be distinguished: manual/mechanical and chemical control. Manual/mechanical control involves the use of grass knives or mechanical slashers. Chemical control involves the use of spraying machines to apply herbicides to the weeds that need to be controlled.

3.2.9 Pruning is the removal of unwanted branches from a cocoa tree. It is an important operation and can affect yield for months, even years, as well as affecting the shape and structure of the tree for the rest of its life. Insects and diseases multiply more on un-pruned cocoa trees with dense canopies than on trees that have been opened up by pruning and display well-aired canopies. Pruning can also stimulate flowering and pod production. Pruning can be carried out properly by using good tools such as a bow saw, a secateur, a chupon knife and a long-handle pruner.

3.2.10 Shade has a very substantial effect on the growth and productivity of the cocoa tree throughout its development into a mature tree. Some degree of shade control is needed through pruning and thinning, to achieve the desired level of shade and maximize growth and production. The effect of shade on cocoa is very complex. Shade influences the microclimate of the cocoa block through its effect on the amount of solar radiation received by the cocoa trees, the wind, the relative humidity and through its effect on the metabolic rate of the cocoa trees, it indirectly influences the nutrient status of the soil. The microclimate, in turn, influences the incidence of pests and diseases.

3.2.11 Taken together, the above mentioned practices imply the application of appropriate integrated crop management to ensure sustainable productivity of cocoa farms.

3.3 **Cocoa crop protection**

10. Disease is one of the major reasons for loss of cocoa production in the world. Controlling it is therefore a key part of efficient management of a cocoa farm. To be able to better control diseases on their farms, growers need to be able to recognize the symptoms, understand the causes of the diseases and know how the disease organisms operate.
11. In controlling cocoa diseases, all trees should receive individual attention, as a single infected plant is likely to act as a source of infection for all the other trees on the farm. If left unattended, one sick tree will eventually lead to all the others also contracting the disease. There are four methods used to prevent diseases developing and/or controlling them if they do become established. These methods are: regulatory, cultural, biological and chemical.

12. In regulatory control, measures are taken, usually by law, to prevent material contaminated with a pathogen from being transported from one area that already has a particular disease to another area which does not yet have the disease. Cultural control is a broad approach that involves preventing the pathogen from coming into contact with and infecting the cocoa trees or eradicating the pathogen or significantly reducing its numbers in an individual plant or within an area. Biological control involves a range of measures that include directly introducing other micro-organisms that are enemies of the pathogen. Chemical control usually seeks to remove the pathogen from the disease location. Chemicals that are toxic to the pathogen are applied to the cocoa or shade trees, either to prevent pathogen inoculum from establishing in a host, or to cure an infection that is already in progress.

3.3.1 Minimize the use of pesticides as much as possible to protect the crop. More emphasis should be placed on resistant varieties, cultural and biological control of pests and diseases.

3.3.2 Where possible, apply early warning mechanisms for pests and diseases i.e. pests and diseases forecasting techniques.

3.3.3 Adoption of Integrated Pest Management (IPM) regimes should be encouraged. Farmers should seek professional advice on IPM to control pests and diseases.

3.3.4 The use of agrochemicals should be restricted to the officially registered ones and should be in accordance with legal, scientific and technical requirements. Only appropriate agrochemicals at the prescribed doses, timing and intervals of applications should be used.

3.3.5 Use only pesticides that are target specific with minimal effect on the agro-ecosystem and minimal negative environmental implications.

3.3.6 Agrochemicals should only be applied by adequately trained adults who are knowledgeable on the safe and proper use of the products. Equipment used for the handling and application of agrochemicals must comply with safety and maintenance standards.

3.3.7 Routine application of broad spectrum insecticides to prevent pests from establishing themselves should not be carried out for the following reasons: Insecticides are expensive, and potentially dangerous/hazardous for the health of the person carrying out the spraying. Furthermore, it can contaminate the local environment (soil and water streams) and the cocoa tree and pods with unacceptably high levels of chemical residues. In addition, excessive use of chemicals can create resistance in the target pests, and can reduce the population of useful predators. If chemical control is over-used, it can lead to yet greater
pest problems that may not be controllable even with the recommended insecticide applications.

3.3.8 Agrochemicals must be stored in accordance with local regulations and secured away from other materials in a well ventilated and well lit location.

3.4 Cocoa harvest, post harvest, on-farm processing and storage

3.4.1 Pods should be harvested as soon as they are ripe. Harvesting should be done every two weeks if there are not many ripe pods, and every week during peak periods. Likewise, it is important to do a separate round of the farm every week to remove sick pods and cherelles with a cocoa hook that is used only for removing diseased material. It is essential that the pods do not become over-ripe as they are more likely to become infected with diseases, and the beans inside over-ripe pods will germinate. Evidence to date suggests that Ochratoxin “A” producing organisms enter the cocoa supply chain via damaged pods. To reduce Ochratoxin “A” in the cocoa supply chain, it is recommended that farmers do not wound pods with a machete. Wounded pods of any kind should not be stored for any longer than one day.

3.4.2 It is equally important not to harvest unripe pods. The beans inside unripe pods will not be ready for fermenting. Unripe beans are hard, without mucilage, and they will neither separate easily nor ferment properly. Beans from unripe pods must not be included in the wet beans for fermentation.

3.4.3 Harvesting must be carried out using specific techniques and tools. Farmers should always use a sharp cocoa hook on a stick. Secateurs can be used to harvest pods within easy reach. These tools should be kept clean - ideally disinfected every day and sharpened regularly with a file. They should not be used for removing diseased pods or cherelles as this will spread the fungus to healthy trees. If a grower only has one long-handled cocoa hook, it is essential that it be disinfected after being used on diseased pods. A bush knife should not be used.

**Pod breaking**

3.4.4 Pod breaking should be conducted in an appropriate manner to avoid damage and contamination to the beans.

3.4.5 Once a sufficiently large quantity of pods has been harvested, the pods must be broken and the beans extracted. It is best to do this straight away or within a couple of days after harvesting in order to avoid losses from diseases.

**Fermentation**
3.4.6  Fermentation of wet beans should be done in accordance with recommended practices. It is recommended or preferable to conduct the fermentation process in approved fermenting boxes. The wet beans are poured into the boxes and “turned” once a day. This process of turning is important as it ensures the even heating of the beans, allows air to enter the ferment, breaks up any lumps and prevents the formation of mould on the beans. If beans are not “turned”, they will not ferment properly and will become mouldy and bad-smelling. The length of the fermentation process is usually five to seven days.

**Drying**

3.4.7  After fermentation, the cocoa beans must be taken out and immediately spread on adequate surfaces to dry, preferably under direct, natural sunlight. If the drying is not started immediately, the cocoa beans will keep fermenting and rot. Excessive drying, particularly related to artificial drying, can cause off-flavours. Care should be taken to ensure that only well-functioning driers which do not allow direct contact of the beans with smoke are used in order to reduce or eliminate smoke contamination of the beans. ECA/CAOBISCO research on the sources and prevention of PAH contamination of cocoa beans in producing countries concluded that the main cause of PAH is smoke contamination during artificial drying. Although the nibs are protected from contamination by the outer shell, research has established that good drying and storage practices are essential in minimizing PAH contamination of the beans. Good drying is as important as good fermenting. The beans will only develop the right brown colour inside if they are properly dried. While on the drying bed, the beans must be turned several times each day.

3.4.8  When the beans are completely dry, they must be sorted to remove the flat beans, shrivelled beans, black beans, mouldy beans, small and/or double beans, beans with insect damage, etc.

**Packaging and storage**

3.4.9  Cocoa beans should be packaged in clean bags which are sufficiently strong and properly sewn or sealed. The bags should be made of non-toxic materials, preferably food grade hydrocarbon-free jute bags.

3.4.10  Once the drying and sorting out process has been completed, the cocoa beans must be put into appropriate bags and stored. Proper bagging and storage of the processed beans is just as important as proper fermentation and drying. Incorrect or careless bagging and storage can lead to rejection of the beans, meaning that time and efforts as well as money have been wasted. The bagged cocoa beans must be placed in storage sheds that are weatherproof, well aired, free from damp and insect pests and away from smoke and other smells that would contaminate the cocoa. The bags must be kept above ground level and away from walls. The storage areas must be kept locked and clean at all times. Following proper fermentation, drying and bagging, the cocoa beans are ready to be sold. Any infestation must be dealt with by proper and approved methods of fumigation.
**Quality control**

3.4.11 Using the appropriate equipment (moisture meters, knives for cut-test, weighing machine, etc.), the quality of the cocoa beans in the bags must be checked before the cocoa is sold. This process is a crucial one as it can considerably affect the final price paid to the farmer. At this stage, the cocoa beans must fulfil certain criteria to the satisfaction of the buyer, including the following: the cocoa must be properly fermented and dried; the cocoa must be free from any foreign odours; the beans must comply with limits in contents of slaty, flat, double, broken, mouldy, insect-damage, foreign matter and germinated beans; the cocoa must conform to the required moisture level; and there have to be a number of cocoa beans per unit weight (100 or 1000 grammes).

3.4.12 While under the present circumstances, quality control is mostly carried out by officials from cooperatives and buyers, it is highly desirable that, in the context of sustainable and more modern cocoa production and marketing, farmers would play a larger role in the marketing of their cocoa. Eventually, they should take over quality control and carry it out at farm level before selling the cocoa beans, thus taking more responsibility for the quality of their cocoa and enabling them to command higher selling prices. In such an approach of closer involvement of farmers in the cocoa production and marketing process, current important issues such as traceability could also be addressed.

**Transportation and Shipping Practices**

3.4.13 Cocoa beans should be well prepared, free from infestation and off-flavours. The cocoa should be loaded in food grade jute bags or prepared for bulk shipping.

3.4.14 Ideally, only cocoa beans should be stored in one location of the cargo vessel. High-fire-risk materials, hazardous or poisonous chemicals, should never be stored with cocoa beans.

3.4.15 Containers for cocoa shipping should be clean and free from residue of previous cargo.

3.4.16 Containers should not have been used to carry chemicals or other materials giving off strong odours.
3.4.18 In view of increasing consumer awareness of food safety issues, traceability is becoming an important agenda for the global cocoa market. Markets now require minimum residue levels of pesticides, mycotoxins, PAH, heavy metals etc, in cocoa beans. To be able to trace the source of contamination, the cocoa beans should be traceable from the farm to the consumer. Increasingly, countries are imposing stricter food regulations driven by consumers’ demand for food that is safe for consumption worldwide.

3.5 Human welfare, health and safety of cocoa producers

13. Human welfare, health and safety are the principal components of sustainability, as the social and economic welfare of farmers, farm workers and their communities greatly depends upon it.

3.5.1 Cocoa should be produced through practices that achieve an optimal balance between economic, social and environmental goals.

3.5.2 Cocoa production should provide adequate household income and food security to producers.

3.5.3 Cocoa producers must adhere to safe working procedures with acceptable working hours.

3.5.4 Reasonable wages must be paid to all hired labour, including where applicable, to women and to children.

3.6 Farm record keeping

3.6.1 Farmers shall keep up-to-date records of all farming activities, including the use of inputs. A comprehensive record keeping system shall be established in which all the essential elements of cocoa production are captured. Records should be kept on the types and sources of planting materials; types of pesticides, fertilizers and usage; etc.

4. Conclusion

14. In order to ensure high quality cocoa, no effort should be spared to implement recommended best known practices. Every step in the process contributes to the final quality of the cocoa produce. From choosing the structure and texture of the soil, preparing and establishing the farm, selecting the planting material, managing the farm (good husbandry), harvesting, through to processing and quality control, all are vital factors and therefore should be taken very seriously by the producers.

15. Based on the above, the ICCO Secretariat could, under guidelines from the Consultative Board, co-operate with experts in this field to bring together best known practices for producing high quality cocoa in a useful practical format, such as posters and/or manuals. Guidance by the Board might include any desired geographical differentiation and specification.
Annex 3

Tasting form used at TCHO and with Equal Exchange and APPCACAO (Peru)
## CACAO Sensorial Analysis

**Tasting Form**

### Notes

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### Intensity

- **Odor/Fragrance**
  - High
  - Medium
  - Low

- **Acidity**
  - High
  - Medium
  - Low

- **Bitterness**
  - High
  - Medium
  - Low

- **Astringency**
  - High
  - Medium
  - Low

- **Flavor/Aroma**
  - Quality scores double towards the total score

- **Cleanliness**
  - High
  - Medium
  - Low

- **Aftertaste**
  - High
  - Medium
  - Low

### Quality Guide

#### Quality Scoring Guide

- **Odor/Fragrance**, **Acidity**, **Flavor/Aroma**, **Cleanliness**, **Aftertaste**

#### Bitterness, Astringency

These characteristics are scored in quality inversely to the perceived intensity.

#### Quality: Select a number based on the scoring guide below

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<th>Very Bad</th>
<th>Bad</th>
<th>Plain</th>
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### Final Score

Taster's Points: [ ]

**Final Score**

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### Comments:

![USAID and TCHO logos]

73
Annex 4

Manual de la ficha catación de cacao
I. INTRODUCCION

El presente manual ha sido elaborado por la necesidad de los productores peruanos de cacao, de contar con una herramienta que permita conocer el potencial, cualidades y perfil sensorial de una muestra de cacao con el fin de mejorar las negociaciones comerciales con clientes y potenciales clientes.

En el documento se explica cómo se usa la ficha de evaluación para evaluar cada uno de los atributos descritos; asimismo, se brindan referencias claras y de aplicación en la memoria sensorial para una mejor catación del cacao.

La evaluación sensorial es innata en el hombre, desde el momento que prueba un producto, hace un juicio sobre si agrada o desagrada, describe y reconoce sus características de sabor, olor, textura, etc. y ello, solo es posible por el uso de sus sentidos los cuales deben estar bien ejercitados para emitir resultados objetivos.

Por otro lado, es recomendable que en la evaluación de las muestras de cacao, se dispongan las condiciones adecuadas, para que no influyan en la evaluación.

El análisis de una muestra se realiza con el fin de encontrar el producto adecuado que más agrade al cliente para su éxito en el mercado.

Finalmente, cabe destacar que este manual ha sido elaborado a partir de experiencias en la cadena de valor del cacao y recogiendo diferentes realidades de nuestro país, por profesionales que apoyados por el proyecto compartieron sus conocimientos y experiencia en capacitaciones. Su misión es que sea de gran utilidad y apoyo al desarrollo sostenible de la comunidad cacatera.
II. ANTECEDENTES

La Asociación Peruana de Productores de Cacao (APPCACAO) en el 2006 se planteó el reto de mejorar la calidad física y sensorial del cacao peruano que se comercializaba tanto a nivel nacional como internacional, —por ello surge la necesidad de formar profesionales en el rubro del Análisis Sensorial de Cacao, que cuenten con capacidades analíticas y destrezas para calificarlos como catadores de Cacao. Se propuso una metodología única para la evaluación del cacao en grano tanto física como sensorial, entre las organizaciones miembros de la asociación, se elaboró una ficha de análisis físico de acuerdo a los requerimientos especificados en la Norma Técnica peruana (NTP-ISO 2451/2006) y una ficha de análisis sensorial básica que recogía formatos usados en otros países.

En el 2011, el Proyecto Desarrollo de Cooperativas bajo el Número AID-OAA-A-10-00024, integrado por USAID – TCHO – EQUAL EXCHANGE y cooperativas del Perú, Ecuador y República Dominicana, planteó la realización de un ciclo de capacitaciones y entrenamiento a miembros de las cooperativas y de la Red-Peruana de Catadores de cacao y chocolates, miembros del APPCACAO. Como resultado de estos encuentros, en marzo del 2013, se formula una ficha de cata con el objeto de valorar las muestras de cacao por su calidad de una manera más global, recopilando información y ejemplos de sistemas de catación de todo el mundo y de otros productos. En marzo del 2014, se realizan cambios a la ficha original para hacerla más comprensible para quienes realicen la Cata de Cacao. Finalmente en febrero del 2015 con el apoyo de la Dirección Universitaria de Investigación, Ciencia y Tecnología (DUICT) de la Universidad Peruana Cayetano Heredia se realizó la edición y validación de la guía, contribuyendo con la calidad de la publicación.

III. OBJETIVO

Los profesionales del cacao (o catadores) utilizan la ficha de análisis sensorial con el fin de realizar una eficiente valoración del producto.

IV. FICHA DE CATACIÓN

DESCRIPCIÓN

La ficha de catación es el instrumento que le permite al catador utilizar sus sentidos para validar siete atributos de la muestras de cacao, presentados en la ficha. En ella se incluyen además secciones para comentarios finales, puntaje del catador y puntaje total, permitiendo con ellos una evaluación general del producto. Para la interpretación de los valores de los atributos se tiene una gráfica dividida en:

- Amargo/Astringencia
- Olor-fragnancia/acidez/sabor-aroma/limpieza/post-gusto

En la gráfica se detalla las escalas correspondientes. Al concluir la ficha, el catador podrá comprobar, validar y clasificar la calidad del cacao y sus productos derivados.
I. FICHA DE CATACIÓN

Estructura de la Ficha

A) ENCABEZADO

El catador deberá poner con letra imprenta y legible su(s) nombre(s), apellidos, fecha de análisis y código de identificación de la muestra.

B) ANÁLISIS SENSORIAL


En cada atributo se organiza cuatro campos que se utilizan para:
• 1er campo: Escribir los descriptores percibidos,
• 2do campo: Valorar la intensidad de los descriptores percibidos,
• 3er campo: Cuantificar la calidad del atributo que se está analizando y
• 4to campo: Colocar numéricamente la calidad del factor. Solo se aceptan números enteros, de preferencia, en el puntaje de calidad, no se permite fracciones.
C) PUNTAJE DEL CATADOR
En esta sección el catador hace una valoración general de la muestra de cacao.

D) PUNTAJE TOTAL
Se incluye el valor de los 7 atributos más el puntaje del catador.

E) COMENTARIOS
Está reservado para los comentarios positivos o negativos percibidos por el catador al evaluar la muestra, y/o para escribir un resumen de la muestra en general.
F) ESCALA DE CALIDAD

Esta sección ayuda al catador a interpretar los índices de los atributos que está evaluando.

En esta escala se debe considerar lo siguiente:
- Para amargor y astringencia, la relación es inversa.
- A mayor amargor y/o astringencia la calidad será menor.
- A menor amargor y/o astringencia la calidad será mayor.
V. GUÍA PARA EL ANÁLISIS Y EVALUACIÓN

CONSIDERACIONES A TENER EN CUENTA ANTES DE LA EVALUACIÓN

- No fumar, no beber alcohol, café, infusiones o bebidas que contengan canela u otras especias; por lo menos, un día antes de la evaluación.
- No realizar períodos prolongados de ejercicios rigurosos, por lo menos 30 minutos antes de una sesión.
- No utilizar sustancias que contengan aromas fuertes como perfumes, cosméticos o jabones aromáticos cuyo aroma persistan en el momento de las evaluaciones.
- No consumir alimentos, por lo menos una hora antes de las evaluaciones.
- Los catadores no deben tener problemas de salud como resfriados, tos, grip, ya que no podrían participar en las sesiones de la prueba.
- No se deberá usar pasta dental, ni enjuague bucal, pastillas o gomas de mascar, por lo menos 2 horas antes de las sesiones.

OBSERVACIONES

- Estas recomendaciones se deben tener en cuenta para no afectar los resultados al evaluar la muestra.

MATERIALES PARA LA EVALUACIÓN

- LÁPIZ
- MUESTRA
- FICHA
PASOS PARA LA EVALUACIÓN DE UNA MUESTRA
OLOR/FRAGANCIA

LEYENDA:
1. Tornar la muestra y llevarla a la altura de la nariz.
2. Percibir el olor/fragancia de la muestra.
3. Anotar lo percibido, la intensidad y calidad.

1. OLOR / FRAGANCIA
El olor es la sensación resultante de la recepción de un estímulo por el sistema sensorial olfativo. Se genera por una mezcla compleja de gases, vapores y polvo antes de poner una muestra en la boca. Puede ser positivo o negativo. La fragancia es aquel olor agradable y suave que desprenden las frutas, la comida, un jabón, un perfume, una crema corporal, entre otros.

PARA ANALIZAR LA FRAGANCIA DEL CACAO:
• El catador tomará el envase que contiene la muestra.
• La llevará a la altura de la nariz, inhalará profundamente tratando de percibir la mayor cantidad de olores que emerjan de la muestra.
• Describirá en el 1er campo de la ficha lo percibido; si no pudo percibir claramente la muestra, podrá repetir la acción.
• Valorará la intensidad de los olores percibidos en el 2do campo como alto, medio-alto, medio, medio-bajo o bajo.
• Cuantificará la calidad de los olores percibidos, en el 3er campo, teniendo en cuenta:

TENER EN CUENTA LOS OLORES / FRAGANCIAS POSITIVAS COMO:
• Dulce: piña confitada, caramelo, chocolate, miel, málta, chancaca o panela.
• Nueces: maní, almendra, pecanas, pistacho, y otras nueces.
• Especias: pimienta, comino, orégano, laurel, canela, clavo de olor.
• Flores: aromas de rosas y otras flores,
• Frutas: manzana, plátano, melón, piña, cereza, uvas, lúcuma.
• Frutos secos: guindones, pasas, higo, cereza seca, durazno seco, fruta confitada.

TENER EN CUENTA LOS OLORES/FRAGancias NEGATIVAS COMO:
• Tierra
• Hierbas
• Moho
• Descomposición y contaminantes

VER GRÁFICO DE RUEDA DE DEFECTOS

Pueden ajustar sus valores tanto en intensidad como en calidad durante la catación. Una manera de hacer esto es marcar sus valores iniciales, y marcar con flechas los cambios percibidos. En el 4to campo en blanco, se coloca la valoración numérica de la calidad final del factor evaluado.
Ejemplo:

ACIDEZ/AMARGOR/ASTRINGENCIA/SABOR-AROMA/LIMPIEZA/POSTGUSTO

LEYENDA:
1. Tomar un trozo de la muestra y llevarlo a la boca, en el caso de que la muestra sea líquida usar una cucharrita.
2. Con la muestra en la boca, se evaluarán los atributos especificados en la ficha.
3. Anotar los atributos encontrados en intensidad y calidad, así como anotar los comentarios generales o específicos de las muestras.
2. ACIDEZ
Es la propiedad organoléptica de sustancias puras o de mezclas cuya degustación produce un sabor ácido como los cítricos.

PARA ANALIZAR LA ACIDEZ DEL CACAO:
- El catador colocará la muestra en su boca, dejará que se disuelva esparciendo en toda la lengua y percibirá el sabor ácido.
- Haciendo uso de su memoria sensorial, diferenciará qué tipo de ácido es el predominante. Por ejemplo, ácido cítrico, acético, láctico, butírico, tartárico, málico, carbónico.
- En el 1er campo, correspondiente a este atributo, describirá su percepción.

VALORAR LA INTENSIDAD EN EL 2DO CAMPO.
- Cuantificará la calidad de los ácidos percibidos en el 3er campo teniendo en cuenta que: Cero (0) es una acidez extremadamente mala o desagradable (butírica, agria, etc.).
- Cinco (5) es una acidez media que no agra da, pero tampoco desagrada (mezcla de cítrica con acética leve).
- Diez (10) es una acidez cítrica brillante sin presencia de otros ácidos (frutas frescas cítricas).
- En el 4to campo, colocará el puntaje de calidad otorgado a la muestra.

Ejemplo:

TENER EN CUENTA LOS OLORES/FRAGANCIAS COMO:
- Ácido acético (vinagre, agrio)
- Ácido cítrico (limón, naranja, moras, pomelo lima, frambuesas, grosellas y arándanos, piña, cerezas, tomates, pimientos, alcachofas, fresas, bayas de sauco grosellas rojas y negras.)
- Ácido carbónico (Coca-Cola)
- Ácido nítrico (carne pútrida)
- Ácido láctico (leche cortada, yogurt)
- Ácido acetil salicílico (aspirina)
- Ácido málico (manzanas)
- Ácido butírico (mantequilla, o en alimentos grasos en general, tanto de origen animal como vegetal en proceso de descomposición)
- Ácido tartárico (uvas, tamarindo, vino, etc.)

3. AMARGOR
Propiedad organoléptica de sustancias puras o de mezclas cuya degustación produce un sabor amargo.
PARA ANALIZAR EL AMARGOR DEL CACAO:

- Esparragar la muestra por toda la lengua para detectar el amargor.
- Describir lo que se está percibiendo en el espacio del 1er. campo.
- Valorar la intensidad con que se percibe el amargor en el 2do. campo.
- Cuantificar la calidad en el 3er. campo, teniendo en cuenta qué califica en forma inversa a la intensidad.
  a. Alto : Calidad de 0 – 2 (Aspirinas, achiote, hoja de verbena, hercampuri, etc.)
  c. Medio : Calidad de 4 – 6 (5 g de café soluble en 100ml de agua, etc.)
  d. Medio Bajo : Calidad de 6 – 8 (médula de limón dulce, etc.)
  e. Bajo : Calidad de 8 – 10 (médula de lima, etc.)

- En el 4to campo, colocar el puntaje de calidad otorgado a la muestra.
  Ejemplo:

<table>
<thead>
<tr>
<th>3. ABRIGAR</th>
<th>Muy baja que desaparece.</th>
<th>Intensidad</th>
<th>Calidad</th>
<th>Calidad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alto</td>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Medio</td>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bajo</td>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. ASTRINGENCIA

Esta sensación se percibe por una contracción de la lengua y el paladar con una sensación de sequedad.

PARA ANALIZAR LA ASTRINGENCIA DE LA MUESTRA DE CACAO:

- Describir lo que se está percibiendo en el 1er. campo.
- Valorar la intensidad en el 2do campo.
- Cuantificar la calidad en el 3er. campo considerando qué calidad es inversa a la intensidad:
  a. Alto : Calidad de 0 – 2 (médula de pecanas, marañón “casho” verde)
  b. Medio Alto : Calidad de 2 – 4 (cáscara de plátanos; Carambolas pintonas)
  c. Medio : Calidad de 4 – 6 (granada, manzana verde, caqui verde)
  d. Medio Bajo : Calidad de 6 – 8 (Guayaba madura)
  e. Bajo : Calidad de 8 – 10 (casi no se percibe astringencia)

- EN EL 4TO CAMPO COLOCAR EL PUNTAJE DE CALIDAD OTORGADO A LA MUESTRA.
  Ejemplo:

<table>
<thead>
<tr>
<th>4. ASTRINGENCIA</th>
<th>Queda en el paladar como cáscara de pecana, cáscara de plátano</th>
<th>Intensidad</th>
<th>Calidad</th>
<th>Calidad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alto</td>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medio</td>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bajo</td>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. SABOR/AROMA

Es la impresión que causa un alimento o otra sustancia, está determinado principalmente por sensaciones químicas detectadas por el gusto así como por el olfato. Una gama de sabores innatos, sin limitarse a los 5 sabores básicos. El aroma es la propiedad organoléptica perceptible por el órgano olfativo, por vía retro-nasal durante la degustación. En este atributo solo se evaluarán los sabores positivos para no involucrar los demás atributos.

PARA ANALIZAR SABOR/AROMA DEL CACAO:

- Describir en el 1er. campo, los sabores que se están percibiendo según el orden en que estos aparecen durante la catación, asociándolos con productos de la memoria sensorial.
- Valorar en el 2do. campo la intensidad de los sabores.
- Cuantificar en el 3er. campo, la calidad de los sabores percibidos.
  a. Cinco (5) para una muestra con sabor plano que no sobresale.
  b. Siete (7) para una muestra que los sabores que se perciben son buenos.
  c. Ocho (8) para una muestra que los sabores que se perciben son muy buenos.
  d. Diez (10) para una muestra que los sabores y aromas percibidos son excelentes, perfectos, muy agradables.
- En el 4to. campo, escribe la calidad cuantificada multiplicada por dos; por ser una característica importante en el cacao.

Ejemplo:

6. LIMPIEZA

La limpieza se define por la ausencia de defectos. Tener en cuenta que:

<table>
<thead>
<tr>
<th>DEFECTOS</th>
<th>NO SON CONSIDERADOS COMO SABORES DEFECTUOSOS LAS SIGUIENTES CATEGORÍAS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tierra</td>
<td>Amargor</td>
</tr>
<tr>
<td>Hierbas</td>
<td>Astringencia</td>
</tr>
<tr>
<td>Moho</td>
<td>Acidez</td>
</tr>
<tr>
<td>Descomposición</td>
<td></td>
</tr>
<tr>
<td>Contaminantes</td>
<td></td>
</tr>
</tbody>
</table>
TENER EN CUENTA:

Si se percibe algún olor defectuoso es necesario calificarlo en “Olor/Fragancia” y, también, si en el postgusto (cuando la muestra se ha disuelto completamente) percibe defectos, se califica en “Postgusto”; no se consideran estos en “Limpieza”. Es obligatorio nombrar el sabor defectuoso o los sabores defectuosos si va a bajar el puntaje en calidad de 10.

El origen o causa del defecto no se toma en cuenta en su evaluación de la calidad. Se evalúa la muestra tal cual como llega. Si el catador opina que los defectos se han causado por alguna falla en el procesamiento, puede incluir esas observaciones y cualquier sugerencia de corrección en ‘Comentarios’, pero esas observaciones no deben afectar los puntajes.

PARA EVALUAR LA LIMPIEZA DEL CACAO:

1. En el 1er. campo describir si percibe algún sabor defectuoso. Puede referir a la rueda de defectos (ver gráfico) para ejemplos comunes. Puede describir un sabor defectuoso que no esté incluido en la rueda, pero si no puede nombrarlo, no debe castigar la muestra en limpieza.

2. Intensidad: Recuerda que la escala es para valorar “¿Qué tan limpia es la muestra” no es “intensidad de defectos”. Entonces, si no hay defectos, es altamente limpio, con un puntaje de calidad alto. Si hay muchos defectos, quiere decir que la muestra es baja en limpieza, y el puntaje de calidad también es bajo.
   a. Alto: No hay ninguna presencia de sabores defectuosos o no hay suficiente para nombrar el defecto.
   b. Medio Alto: Hay presencia de un defecto leve que se puede nombrar.
   c. Medio: La presencia de defectos es fácilmente perceptible y distrae de los aspectos positivos de la muestra.
   d. Medio Bajo: Hay un sabor fuerte de un defecto o una combinación de sabores defectuosos.
   e. Bajo: El defecto o los defectos que dominan la muestra, son graves y extremadamente malos.
3. **Cuantiﬁcar la calidad en el 3er campo, teniendo en cuenta la intensidad y gravedad de los defectos.**

7. **POSTGUSTO**
Sabores que quedan al final de la cata, cuando la muestra se ha disuelto completamente, y estos pueden ser agradables o desagradables.
1. En el 1er. campo describir el sabor o sabores residuales que percibe.
2. Valorar la intensidad de estos sabores en el 2do. campo.
3. Cuantiﬁcar la calidad en el 3er. campo teniendo en cuenta:
   a. Cero (0) para un sabor residual prolongado extremadamente desagradable (Ejemplo: combustible, plástico, etc.)
   b. Cinco (5) para un sabor residual que no agrada, pero tampoco desagradada. (Ejemplo: neutro)
   c. Diez (10) un sabor residual muy agradable. (Ejemplo: herbal, mentolado, etc.)
4. En el 4to. campo colocar el valor numérico de la calidad.
   **Ejemplo:**

8. **COMENTARIOS**
El catador resumirá sus apreciaciones positivas y/o negativas de la muestra y anotará algunas características que no ha descrito durante el proceso de análisis de la muestra.
   **Ejemplo:**
   - **COMENTARIOS**
   - Un olor a melón dulce de chancaca, con una tonalidad herbal. Al fondo se percibe un leve olor a fermento, en conjunto es como una compota de frutas suertidas.
   - Una Acidez cóctica intensa al inicio y se diluye al ﬁnal.
   - Un amargor bajo, con una astringencia media alta y sabores resaltantes a naranja, panela, dulce de frutas, mantillo tostado, polvo de cacao, ﬂor de cítricos, notas herbales y mentoladas refrescantes.
   - Con un post gusto a frutas secas.

9. **PUNTAJE DEL CATADOR**
Para realizar el puntaje del catador:
1. El catador valorará su apreciación ﬁnal de la muestra teniendo en cuenta el balance, la armonía, y todas las características de la muestra.
2. Caliﬁcará de acuerdo a su criterio de Cero (0) a diez (10) puntos
   **Ejemplo:**
10. **PUNTAJE TOTAL**

El catador sumará todos los puntajes que le ha asignado a la muestra en los distintos factores analizados y lo colocará en el recuadro de puntaje general.

**Puntaje Total**

72

**TENER EN CUENTA QUE:**

Para una muestra de cacao la puntuación mínima es 0 y la máxima es 90 puntos, debido a que la ficha está diseñada con esta mínima y máxima puntuación. Se categoriza las muestras de cacao según el puntaje que obtienen.

<table>
<thead>
<tr>
<th>PUNTAJE DE EVALUACIÓN</th>
<th>CALIFICACIÓN</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 65</td>
<td>CACAO CORRIENTE</td>
</tr>
<tr>
<td>65 - 90</td>
<td>CACAO DE CALIDAD</td>
</tr>
</tbody>
</table>

VI. **GLOSARIO DE TÉRMINOS SENSORIALES (NTP - ISO 5492 - 2008)**

- **Acidez**: propiedad organoléptica de sustancias puras o de mezclas cuya degustación produce un sabor ácido.
- **Ácido (sabor)**: describe el sabor elemental producido por soluciones acuosas diluidas de la mayoría de los ácidos, por ejemplo, cítrico, tartárico.
- **Amargo (sabor)**: describe el sabor elemental producido por soluciones acuosas diluidas de diversas sustancias tales como la quinina, algunos otros alcaloides y la cafeína.
- **Amargor**: propiedad organoléptica de sustancias puras o de mezclas cuya degustación produce un sabor amargo.
- **Análisis descriptivo cuantitativo, perfil**: método basado en términos descriptivos para identificar las propiedades sensoriales de una muestra y evaluar la intensidad de cada propiedad.
- **Análisis sensorial**: examen de las propiedades organolépticas de un producto realizable con los sentidos.
- **Aroma**: propiedad organoléptica perceptible por el órgano olfativo, por vía retro-nasal durante la degustación.
- **Aspecto**: conjunto de atributos visibles de un objeto o sustancia
- **Astringencia**: propiedad organoléptica de sustancias puras o de mezclas cuya degustación produce una sensación de sequedad.
- **Atributo**: característica perceptible.
• **Calidad**: conjunto de propiedades y características de un producto o servicio que confiere su capacidad de satisfacer necesidades expresadas o implícitas.

• **Catador**: persona seleccionada por su capacidad para llevar a cabo una prueba sensorial.

• **Cinetesia**: conjunto de sensaciones resultantes de ejercer una presión sobre una muestra por un movimiento muscular (por ejemplo, ensayo de presión con los dedos en el caso de un queso, o mordisco en el caso de una manzana).

• **Dulce (sabor)**: describe el sabor elemental producido por soluciones acuosas tales como la sacarosa.

• **Escala**: continuo dividido en espacios sucesivos, que puede ser gráfico, descriptivo o numérico y que sirve para expresar juicios cuantitativos.

• **Gusto**
  - Sensaciones producidas por el órgano del gusto cuando es estimulado por ciertas sustancias solubles.
  - **Sentido del gusto**
  - Propiedades de los productos que originan las sensaciones gustativas.
  - El término “gusto” no debe ser utilizado para designar el conjunto de sensaciones gustativas, olfativas y trigeminales que son designadas bajo el término de “sabor”. Si en el lenguaje diario, este término es utilizado en este sentido, debe siempre estar acompañado de un calificativo, por ejemplo, gusto de moho, gusto de frambuesa, gusto de corcho.

• **Intensidad**
  - Magnitud de la sensación percibida.
  - Magnitud del estímulo que provoca la sensación percibida.

• **Jurado, panel**: grupo de personas seleccionadas para participar en una prueba sensorial.

• **Olfativo**: que pertenece al sentido del olfato.

• **Organoléptico**: califica los atributos de un producto, que son perceptibles por los órganos de los sentidos.

• **Olor**: propiedad organoléptica perceptible por el órgano olfativo cuando inspira determinadas sustancias volátiles.

• **Producto**: sustancia de consumo o no, que puede ser evaluada por análisis sensorial. Ejemplos: productos alimentarios, productos cosméticos, productos textiles.

• **Sensación**: reacción subjetiva que se produce por la estimulación sensorial.

• **Sensorial**: relativo a los órganos de los sentidos.

• **Sabor**: conjunto complejo de las propiedades olfativas, gustativas y trigeminales que se perciben durante la degustación y que puede estar influído por las propiedades táctiles, térmicas, dolorosas e incluso por efectos cinestésicos.
VII. EQUPO TÉCNICO Y COLABORADORES:

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Responsable de control de la calidad - ARPROCAT
Tumbes

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Tingo María – Huánuco

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VIII. BIBLIOGRAFÍA

- Guía Técnica para la Participación en el Programa “COCOA OF EXCELLENCE” y en la celebración de los “INTERNATIONAL COCOA AWARDS” de 2015 - Reconocimiento a la excelencia en la producción de cacao de origen de alta calidad.
Annex 5

Technical Guidelines for the

Participation in the Cocoa of Excellence Programme and the

International Cocoa Awards Celebrations 2015

Rewarding Excellence in Producing High-quality Cocoa Origins
The partners are pleased to announce the 2015 Edition of the *Cocoa of Excellence* (CoEx) Programme and the *International Cocoa Awards* (ICA), which will be celebrated at the Salon du Chocolat in Paris in October 2015. The initiative is supported by several research institutions, chocolate manufacturers and cocoa organizations. The Cocoa of Excellence Programme is the entry point for farmers to participate in the *International Cocoa Awards*, the only competition of its kind recognizing the work of cocoa farmers and celebrating the diversity of cocoa flavours globally.

1. **Scope of the Cocoa of Excellence Programme**

The **VISION** of the *Cocoa of Excellence Programme* is to achieve farmers'/producers' professionalization and long-term sustainability of the cocoa supply chain. This is through recognizing, preserving and valuing cocoa diversity and through promoting and providing global recognition of high quality cocoa.

The specific **OBJECTIVES** are to:

1. Develop **awareness** all along the supply chain on the opportunity to produce high quality cocoa, resulting from **genetic diversity**, "terroir" and **craftsmanship** of those who prepare cocoa;
2. Facilitate **linkages** between cocoa producers and operators in the supply chains (cocoa bean traders, chocolate manufacturers, etc.);
3. Expose and educate farmers, chocolate manufacturers and consumers to the diversity of **flavours** that exist in high quality cocoa;
4. Stimulate and increase capacity of **producing countries** to recognize, **seek out** and **preserve** quality and diversity in cocoa.

Aspects or specifications of quality in cocoa include: flavour, purity or wholesomeness, consistency, yield of edible material and cocoa butter characteristics. These criteria affect the value and price paid for a parcel of beans. Cocoa of merchantable quality must be fermented, thoroughly dry and free from smoky beans, from abnormal odours and from any evidence of adulteration. They should be reasonably uniform in size, free from broken beans, fragments and pieces of shell, and be virtually free from foreign matter. All activities in cocoa production, management and processing ultimately affect flavour development and final quality. Cocoa flavour development is influenced by the genetic composition of the bean (genetic flavour potential). Pre-harvest conditions may affect pest and disease incidence. Post-harvest processing (fermentation and drying) and during manufacturing (roasting, milling and conching etc.) may also affect quality.
Cocoa producing countries are invited to send well-prepared fermented and dried bean samples representing the genetic and geographic origins of their regions. Cocoa liquor and untempered chocolate samples will be characterised and evaluated firstly by an international panel of experts using standardised methods. Results will be used to identify diverse quality cocoa origins. High quality samples from different origins, with recognized or with interesting new flavour attributes, will be processed into chocolates and nominated for the International Cocoa Awards to be evaluated by professionals and by experienced amateurs at the occasion of the Salon du Chocolat to be held in Paris in October 2015. The awards and results of the quality characterization and information on the provider of nominated samples will be made public.

2. National Organization Committees

Each participating country should set up a National Organization Committee which may consist of representatives of one or more of the following stakeholder groups: research and development institutions, national cocoa boards, quality control centres, NGOs, export promoting institutions, etc. The National Organization Committee is responsible for announcing the Cocoa of Excellence Programme at the national level, for receiving cocoa bean samples from the farmers/producers and for sending well-prepared, fermented and dried bean samples to the International Organization Committee as soon as they are available, preferably from November 2014 and no later than 30 April 2015.

3. International Organization Committee

The initiative is supported by several research institutions, chocolate manufacturers and cocoa organizations. The International Organization Committee is responsible for overseeing the implementation of the Cocoa of Excellence Programme and ensuring that the rules and regulations are applied and that confidentiality is respected and that anonymity is ensured during the evaluation process. It is responsible to receiving the bean samples, for the evaluation of each sample and for the International Expert Panel selections in a transparent and fair manner.

4. Number of cocoa bean samples per country and region

For logistical reasons, the International Organization Committee has limited the total number of samples to be received to a maximum of 266. See individual country quotas in Annex 1. It proposed a distribution of samples to be received from the four geographical cocoa producing regions as follows:

- Africa and the Indian Ocean: 70 samples
- Asia, Pacific and Australia: 51 samples
- Central America and Caribbean: 90 samples
- South America: 55 samples

The National Organization Committees will be asked to propose samples representing diverse geographic and genetic origins in their country. No more than one sample per producer and no more samples than the indicated quota per country should be sent to the Cocoa of Excellence Programme. If more samples are sent, the International Organization Committee reserves the right to eliminate samples according to the proposed country quotas and criteria (see below).

5. Cocoa bean sample providers

Providers of cocoa bean samples for the Cocoa of Excellence Programme can be individual cocoa farmers, groups of cocoa farmers, cooperatives or cocoa estates or national research centres that have
shown their interest to participate and that are able to produce high quality cocoa batches. The National Organization Committee should ensure that the samples provided represent the variability of the whole country. All bean samples should be accompanied by a completed form with all information available on the origin and mode of preparation of each sample (see Annex 3). The National Organization Committee is responsible for the quality of the information provided with each sample. The aim is to classify the samples correctly and to facilitate reproducibility of obtaining samples with the same quality profile. Samples that are not accompanied with a duly filled template are not traceable and cannot be considered.

6. **Shipment of the cocoa bean samples**

The National Organization Committee should send a minimum of 4 kg of each of the bean samples as soon as they become available, preferably **from November 2014 and no later than 30 April 2015**. Samples should be sent in suitable containers, at least made of rigid carton, to avoid loss or contamination of cocoa beans. Please make sure that the bags are strong and well sealed, to avoid any breakage and loss of beans during transport. The cost of the shipment will be born by the providers or by the National Organization Committee. Please note that for courier shipment (e.g. DHL, FedEx, etc.) it is important to indicate that this is a sample of fermented and dried cocoa beans without commercial value. Please put a symbolic value of 5 (five) USD as the value of the package. This is important, otherwise the customs will retain the package and charge import taxes.

The samples should be sent to:

Silvia Araujo de Lima  
Bioversity International  
1990 Boulevard de la Lironde  
Parc Scientifique Agropolis II  
34980 Montferrier sur Lez  
France  
Tel: +33(0)4 67 61 13 02  
Fax: +33(0)4 67 61 03 34  
Email: s.delima@cgiar.org

The detailed information on each of the samples (see section 7 below) should be printed and included in the sample package, as well as sent by email to: Silvia Araujo de Lima (Bioversity International) - email: s.delima@cgiar.org

Please inform Bioversity International by email (using the address provided above) of when shipment is made, the name of the courier, and the courier’s tracking number, so that we can trace the parcel in case of need.

Note that samples submitted of less than the required 4 kg may be removed from consideration at the discretion of the International Organization Committee.

7. **Information and photos to be provided with each cocoa bean sample**

All cocoa bean samples should be accompanied by a completed form with all information available on the origin and mode of preparation of each sample, using the Excel Spreadsheet (same template as
shown in *Annex 3*). The availability of the full information will help to interpret findings of the quality analysis.

The National Organization Committee is responsible for the quality of the information provided with each cocoa bean sample. The aim is to classify the samples correctly and to facilitate reproducibility of obtaining samples with the same quality profile. Samples that are not accompanied with a duly filled template are not traceable and cannot be considered.

Please send photos of pods from 5 trees, closed and open (cut fresh beans, close ups of flowers).

8. **Type and quality of cocoa bean samples**

The sample can be from the two types of cocoa beans: commercial samples and experimental samples.

1. **Commercial samples** are prepared by cocoa farmers/producers from existing commercial plantations, or group of plantations, representing traditional or improved/modern cocoa varieties from different geographic/climatic origins. It should be possible to reproduce the same quality cocoa at commercial scale (several tonnes per year) in subsequent years.

2. **Experimental samples** are derived from interesting new varieties (newly selected varieties or materials with special quality traits) or through new post-harvest processes (e.g. novel fermentation method, etc.). These potentially interesting experimental samples may not be available yet for commercial scale production, but may become so within a few years time. These samples may be prepared by cocoa farmers or by research institutes. *Note*: no more than 30% of samples per country may be experimental samples.

Cocoa bean samples should be selected based on their high quality, i.e.: reasonably uniform in size, free from broken or smoky beans, pests and diseases, and from abnormal odours or any other evidence of contamination. Moreover, samples should be harvested in the main harvesting season and well processed, in order to preserve and enhance their potential flavour development.

9. **Fermentation of the cocoa bean samples**

The fermentation process used should be according to the best available technologies that bring out the intrinsic qualities of the genetics and “*terroir*” and follow these guidelines:

- Only seeds from healthy pods should be used for fermentation
- Removal of the placentas, empty and diseased beans should be done after pod breaking
- Fermentation in large enough amount (minimum amount of wet beans of 100 kg = 1,000 pods) to allow for adequate fermentation conditions
- Heap, basket or box fermentation, or other traditional process
- Fermentation mass to be covered and protected from rain and/or cold
- Duration of fermentation will depend on the variety and local conditions (between 2-7 days)
- Turning of the fermentation mass in an appropriate way, depending on cocoa variety. If unknown use 24, 48 and 96 hrs after initiation of fermentation
- Only experimental samples may be produced through a “micro-fermentation” method (in mesh bags placed inside large cocoa fermentation masses).

Recommendations on selection of fermented and dried bean samples by the National Organization Committees are in *Annex 2*.  

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10. Drying of the cocoa bean samples

The final moisture content of the samples should be less than 8% and follow these guidelines:

- Sun-drying recommended (when possible)
- Protection from rain is required during the drying process
- Covering of beans required during the night
- Thickness of layer of drying between 3 and 5 cm to avoid mouldiness or over-fermentation
- Optimum drying is to 6.5-7.8% humidity (with duration of 5 to 10 days, generally)
- Drying is complete when beans are crispy and have lost elasticity when pressed in the hand.

11. Defects and health of the cocoa bean samples

Samples with obvious defects in preparation will be eliminated by the National Organization Committee. The evaluation with the cut test (100 beans) should have less than 3% slaty beans, 3% mouldy beans (with white mould inside beans), and 3% beans with other defects (broken, insect damaged, germinated, rotten or empty beans). A phytosanitary certificate from the authorities of the country of origin is desirable.

12. Collecting and storage of the cocoa bean samples

The National Organization Committee is responsible for the collection and receipt of the cocoa bean samples at the country level and to store the sample in adequate conditions before shipping to Bioversity International. Damaged or empty beans and remaining placenta are to be removed before bagging. The use of clean jute or nylon bags is recommended. Storage should be in an insect-free cool room. Shipment is to be done as soon as samples are available.

It is advised, although not required, that the National Organization Committee maintains a duplicate of a 4-6 kg sample of each of the submitted samples of beans in storage at their location pending receipt and initial evaluations of the submitted sample. This is recommended in case of damage or loss in the shipping of the initial sample as well as against any questions of bean quality in section 11.

13. Receipt of the cocoa bean samples

Samples received by the International Organization Committee will be acknowledged and verified to ensure that the moisture content, cut tests, presence of defective beans, mouldiness, smoky flavours, etc. of the fermented beans are all within acceptable limits. Beans with evident off-flavours or with other defects above internationally acceptable thresholds will not be considered for further evaluation.

14. Evaluation of the cocoa liquors and chocolate

The details of the evaluation procedure have been developed and agreed by the Cocoa of Excellence Technical Committee. About 700 to 800 g of each bean sample will be used to prepare cocoa liquors and untempered chocolate samples that will be evaluated (blind tasting) by six to eight international experts in sensory evaluation of cocoa samples. The assessment criteria will be harmonized to enable consistency in evaluation methods and scoring. Besides specific flavour traits, scores will be given also for “preference/utility” to assess the overall interest of the sample in making high quality chocolates (including use in possible blends).

15. Evaluation and nomination of the cocoa bean samples for the International Cocoa Awards
Each cocoa bean sample will be processed into cocoa liquor and untempered chocolate that will be evaluated (blind tasting) by a panel of international experts in sensory evaluation. Fifty high quality samples will be selected representing the best flavour quality diversity and the geographic and genetic origins of samples and processed into chocolate. These chocolates will be evaluated blindly by a larger panel of professional chocolate manufacturers and traders. The best samples will be awarded the International Cocoa Awards 2015 (honourable distinctions, without money value) to be celebrated at the Salon du Chocolat in Paris in October 2015.

16. Distribution of results

The outcome of the assessments by the experts and juries will be treated as confidential, unless specifically indicated by the sender. Feedback on raw bean evaluation and on liquor and untempered chocolate flavour profiles of individual samples will be given, as soon as available, to the National Organization Committees to be transmitted to the providers of the cocoa samples. Unless there are specific objections, this information will be used for scientific analysis and reporting whilst ensuring anonymity. If desired and with prior agreement of sample providers, information on raw bean evaluation and on liquor and untempered chocolate flavour profiles can be made available to interested commercial parties. However, the information on the 50 nominated samples and on the awards attributed will be made public on the Cocoa of Excellence Programme web-site.

17. Website

Please refer to the website www.cocoaofexcellence.org for all the latest information, technical guidelines, forms and contacts. It also includes information on previous editions.
## Annex 1. Invited countries and regional quota for the 2015 edition

<table>
<thead>
<tr>
<th>Countries/Regions</th>
<th>Maximum number of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Africa and the Indian Ocean</strong></td>
<td>70</td>
</tr>
<tr>
<td>1. Cameroon</td>
<td>5</td>
</tr>
<tr>
<td>2. Central African Republic</td>
<td>3</td>
</tr>
<tr>
<td>3. Congo</td>
<td>3</td>
</tr>
<tr>
<td>4. Congo DRC</td>
<td>3</td>
</tr>
<tr>
<td>5. Cote d'Ivoire</td>
<td>10</td>
</tr>
<tr>
<td>6. Equatorial Guinea</td>
<td>3</td>
</tr>
<tr>
<td>7. Gabon</td>
<td>5</td>
</tr>
<tr>
<td>8. Ghana</td>
<td>10</td>
</tr>
<tr>
<td>9. Liberia</td>
<td>3</td>
</tr>
<tr>
<td>10. Madagascar</td>
<td>5</td>
</tr>
<tr>
<td>11. Nigeria</td>
<td>5</td>
</tr>
<tr>
<td>12. Sao Tome and Principe</td>
<td>3</td>
</tr>
<tr>
<td>13. Sierra Leone</td>
<td>3</td>
</tr>
<tr>
<td>14. Tanzania</td>
<td>3</td>
</tr>
<tr>
<td>15. Togo</td>
<td>3</td>
</tr>
<tr>
<td>16. Uganda</td>
<td>3</td>
</tr>
<tr>
<td><strong>Asia, Pacific and Australia</strong></td>
<td>51</td>
</tr>
<tr>
<td>17. Australia</td>
<td>3</td>
</tr>
<tr>
<td>18. Fiji</td>
<td>3</td>
</tr>
<tr>
<td>19. Hawaii</td>
<td>3</td>
</tr>
<tr>
<td>20. India</td>
<td>3</td>
</tr>
<tr>
<td>21. Indonesia</td>
<td>10</td>
</tr>
<tr>
<td>22. Malaysia</td>
<td>5</td>
</tr>
<tr>
<td>23. Papua New Guinea</td>
<td>5</td>
</tr>
<tr>
<td>24. Philippines</td>
<td>5</td>
</tr>
<tr>
<td>25. Samoa</td>
<td>3</td>
</tr>
<tr>
<td>26. Solomon Islands</td>
<td>3</td>
</tr>
<tr>
<td>27. Vanuatu</td>
<td>3</td>
</tr>
<tr>
<td>28. Vietnam</td>
<td>5</td>
</tr>
<tr>
<td><strong>Central America and Caribbean</strong></td>
<td>90</td>
</tr>
<tr>
<td>29. Belize</td>
<td>5</td>
</tr>
<tr>
<td>30. Costa Rica</td>
<td>5</td>
</tr>
<tr>
<td>31. Cuba</td>
<td>5</td>
</tr>
<tr>
<td>32. Domenica</td>
<td>3</td>
</tr>
<tr>
<td>33. Dominican Republic</td>
<td>10</td>
</tr>
<tr>
<td>34. El Salvador</td>
<td>3</td>
</tr>
<tr>
<td>35. French Guiana</td>
<td>3</td>
</tr>
<tr>
<td>36. Grenada</td>
<td>3</td>
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<tr>
<td>37. Guadeloupe</td>
<td>3</td>
</tr>
<tr>
<td>38. Guatemala</td>
<td>3</td>
</tr>
<tr>
<td>39. Guyana</td>
<td>3</td>
</tr>
<tr>
<td>40. Haiti</td>
<td>3</td>
</tr>
<tr>
<td>41. Honduras</td>
<td>3</td>
</tr>
<tr>
<td>42. Jamaica</td>
<td>5</td>
</tr>
<tr>
<td>43. Martinique</td>
<td>3</td>
</tr>
<tr>
<td>44. Mexico</td>
<td>5</td>
</tr>
<tr>
<td>45. Nicaragua</td>
<td>3</td>
</tr>
<tr>
<td>46. Panama</td>
<td>3</td>
</tr>
<tr>
<td>47. Puerto Rico</td>
<td>3</td>
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<tr>
<td>48. Saint-Lucia</td>
<td>3</td>
</tr>
<tr>
<td>49. St Vincent and the Grenadines</td>
<td>3</td>
</tr>
<tr>
<td>50. Trinidad and Tobago</td>
<td>10</td>
</tr>
<tr>
<td><strong>South America</strong></td>
<td><strong>55</strong></td>
</tr>
<tr>
<td>51. Bolivia</td>
<td>5</td>
</tr>
<tr>
<td>52. Brazil</td>
<td>10</td>
</tr>
<tr>
<td>53. Colombia</td>
<td>10</td>
</tr>
<tr>
<td>54. Ecuador</td>
<td>10</td>
</tr>
<tr>
<td>55. Peru</td>
<td>10</td>
</tr>
<tr>
<td>56. Venezuela</td>
<td>10</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>266</strong></td>
</tr>
</tbody>
</table>
Annex 2. Recommendations on selection of fermented and dried bean samples by the National Organization Committees

To assess any fermentation problem and the potential flavour attributes, the testa is removed of at least 30 fermented and dried beans, and the cotyledon is crushed in a mortar. The samples prepared are then immediately blind tasted (to avoid disappearance of volatile flavours) by 2-3 experienced cocoa bean tasters (best is to have three experienced tasters nominated among local experts by the National Organization Committee) for the following flavour attributes, using a 0 to 10 point assessment scale for each trait.

Basic quality traits selection

The first selection should be based on the basic quality traits: acidity, bitterness and astringency. Samples with slight acidity and normal bitterness are acceptable. Slight acidity is often related to fresh fruit flavours and bitterness to intense cocoa flavour of cocoa liquors and chocolates. Samples with excessive acidity, bitterness and, especially astringency, should be eliminated.

Flavour traits selection

The simplest and most adequate method for selection is to use the overall preference scores to select for the samples with potentially highest fine-flavour traits. See the Glossary below for the detailed information on each of the descriptors.

- Cocoa
- Acidity
- Bitterness
- Astringency
- Sweet
- Fresh fruit
- Brownd fruit
- Nutty
- Floral
- Woody
- Spicy
- Global quality

High scores for overall global quality can be based on high scores for a few specific flavour traits or on a balanced mixture of average scores for several flavour traits.
Cocoa of Excellence Programme (CoEx): Glossary of terms for flavour evaluations with matching descriptors and examples of some origins/reference notes for calibration.

Reference: Ed Seguine and Darin Sukha, CoEx Edition 2015

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Description</th>
<th>Examples of Origins/References (for calibration)</th>
</tr>
</thead>
</table>
| Cocoa      | • Describes the typical flavour of cocoa beans that are well fermented, roasted and free of defects - Chocolate bars, fermented/roasted cocoa | • Low intensity = 1-2 (Unfermented cocoa)  
• Medium intensity = 4-6 (Fully Fermented Indonesia, PNG, and Arriba)  
• Strong intensity = 8 (West Africa) |
| Acidity    | • Citric Acid - Fruit  
• Acetic Acid - Vinegar (you can smell it in the sample)  
• Lactic Acid - Vomit like, like in sour milk or molasses  
• Mineral Acid - Metallic tasting | • Low intensity = 0-2 (West Africa)  
• Medium = 3 (Arriba)  
• Strong = 4-8 (PNG and Malaysia) |
| Bitterness | • Usually due to a lack of fermentation; perceived on the rear of the tongue/throat - Caffeine (Coffee), Beer, Grapefruit | • Low intensity = 1-2 (ancient Criollo)  
• Low/Moderate (normal) intensity = 3-4 (West Africa)  
• Strong intensity = 7-8 (Unfermented cocoa) |
| Astringency| • Usually due to a lack of fermentation; mouth drying and/or puckering effect which boosts the production of saliva; perceived between tongue and palate or at the back of the front teeth - Raw nut skins, Banana skins, some wines | • Low intensity = 2-3 (ancient Criollo)  
• Moderate (normal) intensity = 3-4 (some West Africa)  
• Medium intensity = 5-6 (Arriba)  
• Strong intensity = 7-8 (Unfermented cocoa) |
| Sweet      | • Describes liquors with a characteristic flavour of unrefined caramelised cane juice (Panela) - Caramel, brown sugar, fudge | • Low intensity = 0 (West Africa - Ghana)  
• Strong intensity = 5-8, ancient Criollo (Venezuela) |
| Fresh fruit| Broad range of fresh fruits  
• Fruit berry - currants, not fully ripe raspberry  
• Fruit citrus - essence of citrus  
• Fruit tropical - banana, passion fruit, orange, almost always some citrus note involved | • Low intensity = 1-2 (West Africa)  
• Medium intensity = 3-5 (Fully Fermented Indonesia)  
• Strong intensity = 6-7, (PNG, some Trinidad (TSH)) |
<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Description</th>
<th>Examples of Origins/References (for calibration)</th>
</tr>
</thead>
</table>
| Browned fruit | • Fruit dark tree - plum, dark cherry  
• Fruit dried - dried apricot, banana etc., caramelisation of fruit sugar, essence of a fruit that has undergone the drying process, sulphur and nutty notes also  
• Fruit over ripe - beginning of over fermentation, over ripe fruit as a step to over fermentation  
• Fruit brown - prunes or dates | • Low intensity = 2, (West Africa)  
• Medium intensity = 3-5 (Fully Fermented Indonesia)  
• Strong intensity = 6-7, (PNG, Some Caribbean origins) |
| Nutty      | • Nutty - nut meat  
• Nut skins - associated with some astringent sensation like skins of almond and peanuts etc. | • Frequently just as a note = 2-3 but can be pronounced 5-8 (ancient Criollo types)  
• Too low roast or under fermentation of most origins |
<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Description</th>
<th>Examples of Origins/References (for calibration)</th>
</tr>
</thead>
</table>
| **Floral**   | Broad range from green grassy vegetative to flowers and perfumed types notes | • Absent - Low intensity = 0-2, (West Africa)  
• Medium - Strong intensity =3-7, (Arriba, Scavina, some Trinidad (TSH))  
• Floral Orange Blossom - Peru, Ecuador  
• Ecuador origin beans tend to be floral, herbal, floral orange blossom, earthy  
• Floral mushroom and earthy are positive attributes (not earthy associated with off flavors musty, moldy, etc.) |
|              | • Floral - coming from natural environment you can get this by taking a walk in your garden, green earthy, herbal and woody |                                                                                                               |
|              | • Floral grassy - green on fresh cut grass, very fresh grass, young leaf (green floral) |                                                                                                               |
|              | • Floral green vegetative (dark green) - green vegetative, old cocoa leaf crushed, dark green note. Green beans, cooked bell peppers (dark green vegetables) |                                                                                                               |
|              | • Floral woody (generic) - was grown now dried essential oil, structural bases, going for walk in forest before winter, the dried flowers |                                                                                                               |
|              | • Floral mushroom - mushroom, meaty, savory, MSG |                                                                                                               |
|              | • Floral earthy - forest after the rain, smell of dampness coming up from the cocoa estate soil |                                                                                                               |
|              | • Floral Herbal - Aged dried spices. Commonality of all the dried herbs and linked with astringency at times |                                                                                                               |
|              | • Floral perfumy - a persistence that lingers like when fixatives (e.g. Vanilla) added to perfume to kick the smell into a persistent mode |                                                                                                               |
|              | • Floral flowers - breathe it in and it’s gone. Difference between most roses and a Lincoln rose |                                                                                                               |
|              | • Floral orange blossom - is essentially floral-flowers but with orange blossom flavor specifically |                                                                                                               |
| **Woody**    | • Woody light wood - ash, beach, maple, white pine, cut cocoa tree | Woody light wood and Woody resin are often (but not always) associated with under fermented and acidic beans       |
|              | • Woody dark wood - oak, walnut, teak | Woody dark wood is often (but not always) associated with well fermented beans                                   |
|              | • Woody resin - pitch pine, balsam of dark or light tree resins |                                                                                                               |
## Descriptor Description

**Spicy**
- Spice tobacco - Tobacco spice is the smell outside a tobacco shop, not ashy and dirty but rather like pipe tobacco, sweet
- Spice peppery - spicy, peppery, savory

**Examples of Origins/References (for calibration)**
- As a note = 1, or clearly present in the sample = 2-3
- Spice tobacco from West Africa, particularly Ivorian beans
- Spice peppery - mainly Columbian and Peruvian origins

## Global quality
- Goes beyond simple attributes but is intended to reflect an overall attribute standing. It is NOT a score derived from any formula or calculation from the attributes but stands on its own for each evaluator to indicate
- It gives an impression of overall quality

**Examples of Origins/References (for calibration)**
- No off flavour must be present in giving a high scoring (>5) for Global quality
- We expect the beans to be good and not have those defects. If they do, the overall quality would be not very good =1-4
- Zero for global quality means a serious flaw is present. This is not a “veto” but is a very clear opinion of the quality-or in this case lack thereof

## Off flavours
- Hammy - carved meats, ham, and improper fermentation
- Smoky - happens when burning vegetative matter (wood, grass, cocoa hulls, etc.). Other off flavours - cocoa contaminated with diesel fumes
- Leather - not freshly tanned in a leather store, but rather more like leather with sweat and urine, like horse saddles
- Over fermented manure - farm yard, manure
- Over fermented putrid - Feces
- Dirty – unpleasant dirty character, like dirty utensils, often associated with quality of astringency, increased astringency = increased dirty flavor etc. Function of dusty
- Bark wood - not good, typically unpleasant, dry, dusty, smelly, not a clean smell. Under fermented, astringency, raw, leather, dirty tend to be associated with bark wood as well

## Attribute Intensity

<table>
<thead>
<tr>
<th>Attribute Intensity</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None present</td>
</tr>
<tr>
<td>Descriptor</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Just a trace and may not be found if tasted again</td>
</tr>
<tr>
<td>2</td>
<td>Present in the sample</td>
</tr>
<tr>
<td>3 to 5</td>
<td>Clearly characterizing the sample</td>
</tr>
<tr>
<td>6 to 8</td>
<td>Dominant</td>
</tr>
<tr>
<td>9 to 10</td>
<td>Maximum that you have experienced</td>
</tr>
</tbody>
</table>
Annex 3. Copy of the Excel sheet format for the detailed information to be provided on cocoa bean samples prepared for the Cocoa of Excellence (CoEx) Celebration 2015

**Note:** Please include a hard copy of the duly compiled Excel spreadsheet in the shipment and send an electronic copy via email as indicated above (see sections 6 and 7 above).

**2015 - Form to be completed in the Excel format for each cocoa sample.**

**NOTE:** indicated in **bold and with * are the required minimum essential information. However, we would appreciate if you could provide as much information as possible on the sample for analysis purposes.**

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Description</th>
<th>Reply</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Person that filled out the form</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Full name of sender</em></td>
<td>First name and family name</td>
<td></td>
</tr>
<tr>
<td><em>Organization</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Email address</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Date information sent</em></td>
<td>dd/mm/yyyy</td>
<td></td>
</tr>
<tr>
<td><strong>B. Type of Sample</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Country name</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Sample number</em></td>
<td>Identification of the cocoa bean sample</td>
<td></td>
</tr>
<tr>
<td><em>Type of sample</em></td>
<td>Commercial or Experimental?</td>
<td></td>
</tr>
<tr>
<td>If commercial sample, what is the quantity of beans (tonnes/year) of the</td>
<td>the same origin that can be reproduced with similar quality in following years?</td>
<td></td>
</tr>
<tr>
<td>If experimental, what type of sample? E.g.: New variety / Accession in</td>
<td>genebank / Local native variety / New processing method?</td>
<td></td>
</tr>
<tr>
<td>If other type of experimental sample, please describe</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>C. Information on the origins of the sample</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Full name of producer of the sample</em></td>
<td>Name of farmer, cooperative or farmer association, or other</td>
<td></td>
</tr>
<tr>
<td>Is the producer a farmer? A cooperative or farmer association? A research</td>
<td>station? Other, please specify</td>
<td></td>
</tr>
<tr>
<td>If the producer is associated to a cooperative, please provide the name of</td>
<td>the cooperative</td>
<td></td>
</tr>
<tr>
<td>the cooperative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of data</td>
<td>Description</td>
<td>Reply</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>*Location of the farm or plantation</td>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Town:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>District:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Region:</td>
<td></td>
</tr>
<tr>
<td>Size and production of the plantation</td>
<td>Size of plantation from which the sample was obtained, in hectares (ha)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Productivity of the plantation where the sample came from (Kg/ha)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average age of the trees from which the sample was obtained (years)</td>
<td></td>
</tr>
<tr>
<td>Climate</td>
<td>Start of the dry period (month of the year)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>End of the dry period (month of the year)</td>
<td></td>
</tr>
<tr>
<td>*Farming practices</td>
<td>Type of farming practices: Traditional / Certified organic / Rainforest Alliance / UTZ / Fairtrade / Others. If Others, please specify. Please include a copy of the certificate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use of fertilizer? Yes/No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If use of fertilizer, please specify what type</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use of pesticides? Yes/No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If use of pesticides, what products?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use of permanent shade? Yes/No</td>
<td></td>
</tr>
<tr>
<td>*Variety</td>
<td>Local name(s) of variety</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dominating genetic origin of variety: Criollo (as anciently cultivated or similar) / Trinitario / Forastero / Nacional / Other type. If Other type, please specify</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If other genetic origin, which one?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If a cross, what are the names of the parents (mother x father)?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If experimental sample, describe the genetic origin</td>
<td></td>
</tr>
<tr>
<td>*Trees</td>
<td>Are the trees planted from seed, grafted or other propagation technique?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If grafted, what is the root stock (if known)?</td>
<td></td>
</tr>
<tr>
<td>Type of data</td>
<td>Description</td>
<td>Reply</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>If grafted, what type of grafting is used (top graft, patch bud graft, graft on mature tree)?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**D. Information on when and how the bean samples were prepared**

<table>
<thead>
<tr>
<th>*Sample characteristics</th>
<th>When was the sample fermented and dried? (month/year)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Where was the sample fermented? On-farm or On experimental station?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weight of cocoa sample collected (kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Has a cut test been done? Yes/No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If a cut test was done, what % of slaty beans?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of violet beans/not fermented?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of violet-brown beans/semi-fermented?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of brown beans?</td>
<td></td>
</tr>
<tr>
<td>Storage of the sample</td>
<td>Temperature of sample storage (degrees Celsius C°)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relative humidity of sample storage’s place (%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any pest control carried out? Yes/No</td>
<td></td>
</tr>
<tr>
<td>Post-harvest practices</td>
<td>Time between harvest and pod breaking (in days)</td>
<td></td>
</tr>
<tr>
<td>*Fermentation method</td>
<td>As usually applied in the region? Yes/No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If no, what is the main difference</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fermentation carried out in: Wooden boxes / Heaps / In bags / Other. If Other, please specify</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pre-drying of wet beans before fermentation? Yes/No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Estimated size of fermentation mass in heap, boxes or bags (kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duration of fermentation (days)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of turns during fermentation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of days after fermentation started when beans were turned (days)</td>
<td></td>
</tr>
<tr>
<td>Only for experimental samples</td>
<td>If micro-fermentation was done: weight of wet beans in netted bags placed in a fermentation mass (kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If micro-fermentation: weight of total cocoa mass (kg)</td>
<td></td>
</tr>
<tr>
<td>*Sun drying</td>
<td>Drying as usually done in the region? Yes/No</td>
<td></td>
</tr>
<tr>
<td>Type of data</td>
<td>Description</td>
<td>Reply</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>If not, what is the main difference?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duration of total drying process (days)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Composition of the drying floor material?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If other drying floor, what material?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thickness of bean layer on the drying floor (cm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Utilisation of mixed sun and artificial drying: Yes/No</td>
<td></td>
</tr>
<tr>
<td>*Solar drying (covered)</td>
<td>Please describe the construction of the solar dryer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>What is the bean bed depth on the drying trays?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>What is the composition of the drying trays?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duration of solar drying (days)?</td>
<td></td>
</tr>
<tr>
<td>*Artificial drying: “mechanical” or “forced”</td>
<td>Type of dryer used: Tray and fire / Samoa type / Other</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If other type of drier, which?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Source of heat used: Wood /Waste /Gas / Fuel / Others. If Others, please specify</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thickness of the bean layer (cm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duration of artificial drying (days)?</td>
<td></td>
</tr>
</tbody>
</table>
Annex 6

The Fine Cacao and Chocolate Institute “Cacao Sampling Protocol”
**FCCI cacao sampling protocol**

**Purpose**
The Fine Cacao and Chocolate Institute recommends these standards for preparing and evaluating cacao samples. These guidelines will ensure the ability to most accurately assess the quality of the cacao.

**Materials needed**
- Samples of unroasted cacao beans for tasting and comparison (ideally, multiple samples)
- White cane sugar or xylitol
- Popcorn popper
- Electric blade mill coffee grinder
- Stemless wine glasses for holding samples
- Cups for water
- Spittoon or spit cup
- 1 teaspoon measuring instrument
- 1/8 teaspoon measuring instrument
- Evaluation forms
- Pens with scent-free ink

**Equipment specifications**
Popcorn popper: Strongly recommended is the West Bend Air Crazy 3.5-quart popcorn popper (item number 82416). Another popcorn popper of similar capacity with tangential air flow guides can be substituted if necessary.

Coffee grinder: Strongly recommended is the KRUPS 3-ounce coffee grinder (item number F203). Another coffee grinder of similar capacity with stainless steel blades can be substituted if necessary.

Wine glasses: Strongly recommend are stemless wine glasses of approximately 15 to 17-ounce capacity with a top diameter of 3 to 3.5 inches. All wine glasses used should be of identical volume, dimensions, and material of manufacture. FCCI currently uses Libbey Vina 16.75-ounce stemless red wine glasses.

**Environment**
- Well lit
- Clean, no interfering aromas
- Quiet, with limited distractions
- Comfortable temperature

**Method**
Prepare each sample
1. Select 30-50 beans at random.
2. Shell and winnow the beans. If possible, the beans may be shelled fully raw. If this proves difficult, prior to shelling, the beans may be puffed in a popcorn popper for at most 45 seconds while shaking the popper to keep the beans agitated. It is important that heat exposure to the beans be minimal.
3. Quickly grind the shelled beans to around 500μm in a clean coffee blade mill for at most 10 seconds while vigorously shaking the mill up and down to prevent clumping. Note that it takes some care to keep the material moving to prevent hot spots. The goal is a grind similar to a standard coffee crisp grind.
4. Place the ground material in a stemless wine glass, and label the sample with a random three-digit identifier. Proceed with evaluation within a few hours of preparation.
FCCI cacao sampling protocol

Evaluate each sample without sugar
5. Agitate the material while holding your nose over the cup via tumbling or gentle stirring with an implement.
6. Place 1 teaspoon of material into your mouth and chew. Move it around your mouth, periodically opening your mouth while chewing, and detect aromas for 30 seconds.
7. Spit and record readings on taste and aroma.
8. Rinse your mouth thoroughly with room temperature water, and expectorate the rinse water.
9. If you experience palate overload or a sample’s astringency carries over too much, take a break.

Evaluate each sample with sugar (after evaluating all samples without sugar)
10. Repeat the procedure with the addition of 1/8 tsp of sugar or xylitol and note any differences in aroma detection results.

Food safety
Samples with obvious defects, as explained here, should not be used for organoleptic evaluation. An evaluation cut test with 100 beans should reveal at most 1% beans with internal mold. Use common sense when determining whether a sample is safe to consume. Wherever possible, a phytosanitary certificate issued by regulatory authorities of the country of origin is desirable to ensure that sanitary and phytosanitary standards have been met.

As with many raw or unpasteurized food products, infants and young children, pregnant women, older adults, and those who are immunocompromised should not participate without the advice of a medical professional.

When preparing and evaluating samples, it is essential to wash your hands often, particularly before and after preparation, and especially after handling raw cacao. A good hand washing protocol includes wetting your hands; applying scent-free soap; rubbing your hands vigorously together for 20 seconds; rinsing your hands thoroughly under clean, running warm water; and drying your hands completely using a clean disposable or cloth towel.

To avoid microbial foodborne illness, thoroughly clean all food contact surfaces and keep cacao samples separate during transportation, preparation, and storage. Care should be taken to remove all shell fragments from samples before grinding.

Sample evaluation
The attached evaluation form provides a means of recording important flavor attributes for cacao. A full description of these attributes is forthcoming.

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Annex 7

The Fine Cacao and Chocolate Institute “Cacao Grader Evaluation Form”
# Fine Cacao and Chocolate Institute Cacao Grader Evaluation

## External evaluation, whole beans

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bean count</td>
<td></td>
</tr>
<tr>
<td>Moisture content %</td>
<td></td>
</tr>
<tr>
<td>Size (qualitative)</td>
<td></td>
</tr>
<tr>
<td>Detritus % by weight</td>
<td></td>
</tr>
</tbody>
</table>

## External defects (100 beans, count)

<table>
<thead>
<tr>
<th>Defect</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td></td>
</tr>
<tr>
<td>Severely moldy</td>
<td></td>
</tr>
<tr>
<td>Germinated</td>
<td></td>
</tr>
<tr>
<td>Insect damaged</td>
<td></td>
</tr>
<tr>
<td>Clumped</td>
<td></td>
</tr>
<tr>
<td>Cut</td>
<td></td>
</tr>
</tbody>
</table>

## Raw bean aroma

### Positive/Neutral

<table>
<thead>
<tr>
<th>Aroma</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vinegar</td>
<td></td>
</tr>
<tr>
<td>Cocoa</td>
<td></td>
</tr>
<tr>
<td>Nutty</td>
<td></td>
</tr>
<tr>
<td>Fruity</td>
<td></td>
</tr>
<tr>
<td>Spicy</td>
<td></td>
</tr>
<tr>
<td>Floral</td>
<td></td>
</tr>
</tbody>
</table>

### Defective

<table>
<thead>
<tr>
<th>Aroma</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hammy</td>
<td></td>
</tr>
<tr>
<td>Smoky</td>
<td></td>
</tr>
<tr>
<td>Musty/Moldy</td>
<td></td>
</tr>
<tr>
<td>Putrid/Garbage</td>
<td></td>
</tr>
<tr>
<td>Rancid/Chewy</td>
<td></td>
</tr>
<tr>
<td>Meaty</td>
<td></td>
</tr>
<tr>
<td>Animal</td>
<td></td>
</tr>
</tbody>
</table>

## Cut test (100 beans, count)

### Fermentation level

<table>
<thead>
<tr>
<th>Level</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully brown</td>
<td></td>
</tr>
<tr>
<td>Partially brown</td>
<td></td>
</tr>
<tr>
<td>Violet</td>
<td></td>
</tr>
<tr>
<td>Violet unfermented</td>
<td></td>
</tr>
</tbody>
</table>

### Defective

<table>
<thead>
<tr>
<th>Defect</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slaty</td>
<td></td>
</tr>
<tr>
<td>Moldy</td>
<td></td>
</tr>
<tr>
<td>Germinated</td>
<td></td>
</tr>
<tr>
<td>Insect damaged</td>
<td></td>
</tr>
<tr>
<td>Overfermented</td>
<td></td>
</tr>
</tbody>
</table>

## Other attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blend</td>
<td></td>
</tr>
</tbody>
</table>

## Organoleptic evaluation, shelled ground beans

### Taste

<table>
<thead>
<tr>
<th>Flavor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acidity</td>
<td></td>
</tr>
<tr>
<td>Bitterness</td>
<td></td>
</tr>
<tr>
<td>Astringency</td>
<td></td>
</tr>
</tbody>
</table>

### Aroma

<table>
<thead>
<tr>
<th>Positive/Neutral</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocoa</td>
<td></td>
</tr>
<tr>
<td>Fresh fruit</td>
<td></td>
</tr>
<tr>
<td>Dried fruit</td>
<td></td>
</tr>
<tr>
<td>Floral</td>
<td></td>
</tr>
<tr>
<td>Nutty</td>
<td></td>
</tr>
<tr>
<td>Spicy</td>
<td></td>
</tr>
<tr>
<td>Caramel/Malty/Candied</td>
<td></td>
</tr>
<tr>
<td>Buttery</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Defective</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hammy</td>
<td></td>
</tr>
<tr>
<td>Smoky</td>
<td></td>
</tr>
<tr>
<td>Musty/Moldy</td>
<td></td>
</tr>
<tr>
<td>Putrid/Garbage</td>
<td></td>
</tr>
<tr>
<td>Rancid/Chewy</td>
<td></td>
</tr>
<tr>
<td>Medicinal/Phonolic</td>
<td></td>
</tr>
<tr>
<td>Sulfurous/Rubbery</td>
<td></td>
</tr>
<tr>
<td>Pungent</td>
<td></td>
</tr>
<tr>
<td>Sweaty</td>
<td></td>
</tr>
<tr>
<td>Metallic</td>
<td></td>
</tr>
<tr>
<td>Meaty</td>
<td></td>
</tr>
<tr>
<td>Woody</td>
<td></td>
</tr>
<tr>
<td>Animal</td>
<td></td>
</tr>
</tbody>
</table>

## Overall impression

<table>
<thead>
<tr>
<th>Impression</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td></td>
</tr>
</tbody>
</table>

---

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