

MYCOCOA BEST CERTIFICATION

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ABSTRACT - *Malaysian Cocoa Board has identified one avenue to increase cocoa smallholders income through the production of premium dried cocoa beans. Premium dried cocoa beans include cocoa beans with good flavour profile and the absence of off-flavours. The aim of the project is to certify dried cocoa beans produced by local smallholders which fulfil criteria for premium cocoa beans. Certification will allow the traceability of the dried cocoa beans in the supply chain. This project will require many supporting elements such as the development and training of sensory panellist with special sensory attributes of premium cocoa liquors, development of reference cocoa liquor with known sensory attributes and scores. Cocoa beans flavour profiles by gas chromatography will also be analysed and correlate with the sensory flavour profile. Other parameters such as pH, titratable acidity, sugar profile, organic acid profile, methylxanthine, polyphenol, heavy metals and pesticide will also be studied. Based on the results of those analyses, parameters will be identified which can be utilized to identify premium cocoa beans faster. Beside traceability, certification will increase the marketability and demand for local premium cocoa beans.*

Keywords: certification, flavour profile, premium cocoa beans, sensory evaluation

INTRODUCTION

The cocoa cultivated area in 2018 was at 15,008 hectares whereby 98% of total planted area was cultivated by smallholders (Ministry of Primary Industry Strategy Paper, 2019). The number of smallholders is 12, 839 with an average area of 1.15 ha per smallholders. The total cocoa beans production was 814 tonnes with an average yield of 0.09 tonnes/ha. These statistics does not bode well for the Malaysian cocoa industry.

Malaysian Cocoa Board had identified an opportunity for the Malaysia cocoa industry with the emergence of niche market for specialty cocoa beans. Specialty cocoa beans can comprise of several types of cocoa beans for example certified organic cocoa beans, certified fair-trade cocoa beans, single origin cocoa beans

and cocoa beans with special flavours. This type of cocoa beans can fetch premium price in the niche cocoa market and therefore provide cocoa farmers with higher profits. According to Carla Martin, Executive Director of Fine Cacao and Chocolate Institute (Martin, 2017), specialty cocoa is cocoa produced with craftsmanship and intention toward the sales goal of receiving a premium above the bulk commodity market price. Specialty cocoa production is based on a notion of quality that is linked to lack of defects and the presence of fine flavour and aroma.

Currently several cocoa farmers are venturing into the 'beans-to-bar' chocolate making business. They have their own cocoa farm and are utilizing their own cocoa processing technique to manipulate the final cocoa flavour.

These farmers also use this cocoa bean in the production of their own range of chocolate products. These types of entrepreneurs have very high passion for their products and are willing to invest their time and effort to improve and promote their products. Several companies that are producing specialty chocolate are listed in the Appendix.

What is certification?




There are many types of certification that we are familiar with for example Halal, MyOrganic, Good Agriculture Practice (GAP), HACCP etc. International Organisation for Standardisation (ISO) defined certification as ‘third party attestation related to products, processes, systems or persons’. Attestation here meaning issuance of a statement, based on a decision following review that fulfilment of specified requirements has been demonstrated. Codex defined certification as ‘the procedure by which official or officially recognised certification bodies provide written or equivalent assurance that foods or food control system conform to requirements’.

Basically certification is the action or process of providing someone or something with an official document attesting to a status or level of achievement. Certification provides several

benefits to both the producer and consumer. For example, certification allows the producer to gain marketing advantage. A certified product may display the trademark indicating that the product has undergone evaluation and testing to verify that the product will perform as indicated. Certification indicate that the certified product meets regulatory requirements. Some countries for example the European Union have specific regulations permitting only certified products to be sold in their countries. Product which are certified are consistent since certification bodies conduct regular inspection to verify that manufacturing practices follow specified procedures all the time. Lastly certification protects consumer.

Cocoa certification is of importance due to social, environmental and economical issues. Increasing demand for sustainable cocoa due to consumer pressure push companies to establish ambitious goals and implementing programmes to increase their sustainable cocoa procurement. Currently there are several certification schemes involved in cocoa certification (Table 1). The philosophy to each scheme may differ but they all essentially converge on fostering sustainable practices in the cocoa value chain and improving farmers livelihoods, develop good agriculture practices and on capacity building.

Table 1. Examples of certification for cocoa

Certification scheme logo	Certification scheme focus
	Biodiversity conservation and sustainable livelihood of farmers. Focused on increasing productivity and covers tropical commodities and tourism.
	Professionalize agriculture practices and operational management. Focus on increasing productivity. Covers coffee, tea and cocoa. Have merged with Rainforest Alliance.
	Promote better trading conditions and empower producers. Focus on a wide range of commodities and gold.

The cocoa certification process is comparable across all certification schemes with the existence of different requirements covering a range of areas related to social, environmental and economic issues. Basically farmers need to comply with the determined requirements and verification are carried out by independent auditors, through regular audits (frequency vary per scheme). Key changes to adapt to certification happen at farm level, responsibilities for and cost of certification are distributed through the value chain (KPMG, 2012).

ICCO study found that some farmers are less likely to benefit from certification, in particular 1) farmers with a cocoa plot smaller than 1 ha, 2) farmers who is not a member of a coop and 3) farmers who have a low productivity improvement potential. However the study also noted that even without productivity improvement, farmers of sufficient size will generally benefit from certification.

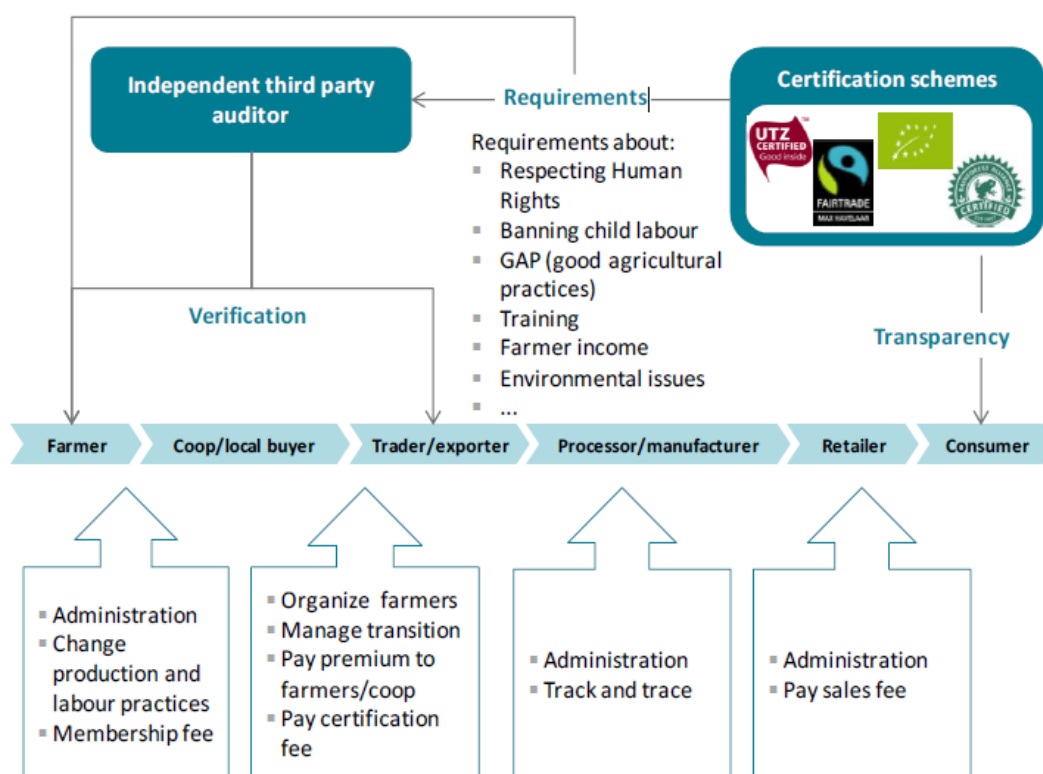


Fig. 1. Roles and processes related to certification of sustainable cocoa (KPMG, 2012)

MyCocoa BEST certification

Currently physical quality of dried cocoa beans in Malaysia is determined based on physical grading according to Malaysian Standard (MS) 2672:2017-Dried Cocoa Beans Specifications. Quality monitoring of cocoa beans for chemicals contaminants were also conducted based on cocoa planting areas on regular basis through dry cocoa beans collected from farmers by the Enforcement and Quality Control (Pengawalseliaan dan Kawalan Kualiti) Division. Currently cocoa beans were analysed for heavy metals (arsenic, cadmium, antimony, mercury, plumbum) and pesticides residues (26 active ingredients)

Since the majority of cocoa smallholders are small family business with small capitals, certification of cocoa beans is not really viable and economical. However, the emergence of younger and ambitious cocoa farmers, are creating a new market of specialty chocolate. The supplies of cocoa beans are both local and

also imported. These chocolate manufacturers indicated that a certification of origin/quality for their chocolate may benefit and make their products more competitive.

Malaysian Cocoa Board proposed to develop a certification scheme which will include aspect of food safety and hygiene such as food contaminants (heavy metals, pesticides, mycotoxins, PAHs, foreign matter and flavour especially off-flavour/defects). The name of the proposed certification scheme is MyCocoa BEST (Beans of Excellence Single Trait). Initially, a pilot study will be carried out to detail out all the requirements and also to prepare the laboratory for all the required testings especially on flavour evaluations.

Flavour evaluation is an especially important criterion for specialty cocoa beans. Dry cocoa beans need to be roasted and turn into cocoa liquor before evaluation by trained panellist. Cocoa liquor flavor will be determined for basic flavour attributes; cocoa, sweet, sour, astringent,

bitter. Any off flavour such as smoky, hammy, mouldy when detected should be noted. Any special flavour attributes such as fruity, flowery, spicy, woody, green will also be noted. This aspect of evaluation requires trained sensory panellist who should be trained periodically according to a standard procedures and panellist should also be calibrated with standardised cocoa liquor to further refine their evaluation skill.

Other characteristics of cocoa beans such as pH, titratable acidity, sugar profile, organic acid profile, methylxanthine, polyphenol (epicatechin/catechin and total polyphenol) and flavour compound profile (HS-SPME GCMS) should be analysed and correlated with the sensory data of the cocoa beans/cocoa liquors. These data serve as database and profile of dry cocoa beans for each production areas. Studies reported that bulk cocoa can be differentiated based on its genotype, primary processing, geographic origin (Amores et al.2007). Cocoa liquor and chocolate from bulk cocoa (West African, Forastero) were reported to contain more abundant volatile aroma compounds compared to fine/flavour cocoa beans (Equador, Nacional). However fine/flavour cocoa beans are richer in most quantified non-volatile metabolites (Tuenter et al., 2020). This research also found that alcohol, pyrazines, amino acids and biogenic amines to be highly influential in differentiating between these cocoa liquor and chocolate.

During this initial phase it is also important to prepare the laboratory capabilities to be able to confirm the origin/localities of cocoa beans if cases of false declaration occur. Therefore laboratory must identified the best marker to easily, quickly and economically utilised to indicate the origin/localities/genotype of cocoa beans.

Due to the nature of premium/specialty cocoa beans which are produced from particular origin, the quantities of cocoa beans may be small and cocoa beans should be separated/not mixed with cocoa beans from other origin. This may present a problem if any food contaminants level is found to be high since the cocoa beans cannot be blended or mix with cocoa beans from other sources with a low level of contamination.

CONCLUSION

MyCocoa BEST certification will ensure that specialty dry cocoa beans are produce according to the requirements and the food safety and quality aspects are fulfilled. Furthermore these cocoa beans also have good flavour potential and does not contain any off-flavour. The certification scheme should be designed such that it benefits everyone within the cocoa value chain and will promote Malaysian Chocolate in the specialty chocolate market.

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APPENDIX

List of 'beans-to-bar' chocolate manufacturer in Malaysia

Company	Chocolate products
<p>Beryl's Sdn. Bhd. 2, Jalan Raya 7/1, Kawasan Perindustrian Seri Kembangan, 43300 Seri Kembangan, Selangor Darul Ehsan, Malaysia.</p>	<ol style="list-style-type: none"> 1. Single origin 55% Cacao Dark Chocolate 60g-Vietnam (RM 15.80) 2. Single origin 55% Cacao Dark Chocolate 60g-Peru (RM 15.80) 3. Single origin 55% Cacao Dark Chocolate 60g-Tanzania (RM 15.80) 4. Single origin 55% Cacao Dark Chocolate 60g-Madagascar (RM 15.80) 5. Single origin 55% Cacao Dark Chocolate 60g-Dominican Republic (RM 15.80) 6. Single origin 55% Cacao Dark Chocolate 60g-Haiti (RM 15.80) 7. Single origin 55% Cacao Dark Chocolate 60g-Malaysia (RM13.80) 8. Single origin 70% Cacao Dark Chocolate 60g-Vietnam (RM 15.80) 9. Single origin 70% Cocoa Dark Chocolate 60g-Peru (RM15.80) 10. Single origin 70% Cocoa Dark Chocolate-Tanzania (RM 15.80) 11. Single origin 70% Cocoa Dark Chocolate-Madagascar (RM 15.80) 12. Single origin 70% Cocoa Dark Chocolate-Dominican Republic (RM 15.80) 13. Single origin 70% Cocoa Dark Chocolate-Haiti (RM 15.80) 14. Single origin 70% Cocoa Dark Chocolate 60g-Malaysia (RM13.80)
<p>Chocolate CONCIERGE Bangsar Shopping Centre Jalan Sena, 59000 Kuala Lumpur Wilayah Persekutuan Kuala Lumpur</p>	<ol style="list-style-type: none"> 1. Semai BBQ Coconut *4 (Toasted coconut, black pepper, coconut 'milk' chocolate) 2. Semai 50% *4 Cocoanut Milk Chocolate 3. Semai 65% with nibs *3 Dark Chocolate with nibs 4. Semai 72% *2 5. Hulu Gali 70% *2 6. Merdeka 70% *2 Tras. Malaysia Origina 7. Damak 70% *2 Limited Edition 8. Batang Kali 70% *2 Unroasted cocoa
<p>Benns Chocolate Factory Sdn. Bhd. Lot No. 1, Jalan CJ 1/6C Kawasan Perindustrian Cheras Jaya, Batu 11, 43200 Cheras, Selangor</p>	<ol style="list-style-type: none"> 1. Vung Tau-Plain or with cacao nibs Vung Tau, Vietnam, 72% Dark Chocolate, 32g, Conch time-36hrs, Roast-Low, Bean type-Trinitario, RM14.99 2. Anaimalai-Plain or with cacao nibs Anaimalai, India, 72% Dark Chocolate, 3. Lampang-Plain or with cacao nibs Lampang, Thailand, 32g, 72% Dark Chocolate

	<ol style="list-style-type: none"> 4. Calinan-Plain or with cacao nibs Calinan, Philippines, 72% Dark Chocolate, RM14.99 5. Sg. Ruan-Plain or with cacao nibs Sg. Ruan, Malaysia, 72% Dark Chocolate, Roast-High, Bean type-Trinitario, RM 14.99
<p>Bonaterra Cocoa Mills and Chocolate Maker No.25, Lot 81, Sierra Bizhub, Bandar Sierra, Off Mile 13.5, Jalan Tuaran, Menggatal (58.03 km) 88450 Kota Kinabalu</p>	<ol style="list-style-type: none"> 1. Kota Marudu 72% 2. Keningau 68% 3. Tawau 74% 4. Borneo 70%
<p>Harriston Signature Jalan Cheras 10 & 12, Jalan 13/91, Jalan Cheras, Taman Shamelin Perkasa, 56100 Kuala Lumpur, Malaysia Tel: +603-9281 5122 Email: general@harristonchocolate.com</p>	<ol style="list-style-type: none"> 1. Single origin-72% Hulu Selangor Dark Chocolate 2. Single origin-72% Raub Dark Chocolate 3. Single origin-72% Titiwangsa Dark Chocolate
<p>Seniman Kakao 29, Jalan Pudu Lama, Bukit Bintang, 50200 Kuala Lumpur, Malaysia</p>	<ol style="list-style-type: none"> 1. 72% Cacao Melaka 2. 72% Cacao Perak 3. 72% Cacao Pahang
<p>Cocoraw 1, Jalan Telawi 3, Bangsar</p>	<p>Uses commercial Belgian chocolate and chocolate from Pahang (by Seniman Kakao) Made truffles ('nama' styled chocolate):</p> <ol style="list-style-type: none"> 1. The Local Kakao-70% Pahang 2. The Salted Gula Melaka 3. The Teh Tarik 4. The Gin and Limau Nipis 5. The Alcoholic Anonymous <p>RM 19 (12 pieces); RM 30 (24 pieces)</p>
<p>Nayuta Chocolatasia ISETAN The Japan Store Kuala Lumpur Malaysia Kuala Lumpur Lot 10 Shopping Center</p>	<ol style="list-style-type: none"> 1. 72% Bitter (Malaysia, Philippines, Vietnam, Indonesia) 2. 51% Milk (Malaysia, Philippines, Vietnam, Indonesia) 3. 40% Milk (Malaysia, Philippines, Vietnam, Indonesia) 4. Mango, Coconut, Almond, Cashew Nut